SM_CS_R32_3D INV_EU_NA_2511

PORTA PORTABLE SPLIT INVERTER SERIES

SERVICE MANUAL

Caution: Risk of fire
(Required for R32/R290
units only)

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Safety Precautions

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1. Safety Precautions

To prevent personal injury, or property or unit damage, adhere to all precautionary measures and instructions outlined in this manual. Before servicing a unit, refer to this service manual and its relevant sections.

Failure to adhere to all precautionary measures listed in this section may result in personal injury, damage to the unit or to property, or in extreme cases, death.

WARNING indicates a potentially hazardous situation which if not avoided could result in serious personal injury, or death.

CAUTION indicates a potentially hazardous situation which if not avoided could result in minor or moderate personal injury, or unit damage.

Electrical Voltage Risk of exposure to high voltage electrical current that may result in injury or death.

WARNING

- Do not lift the appliance by the hose. Always use the handles.
- Do not pull the unit by the power cord or tubing.
- Plastic bags and other packaging are not toys and may be dangerous to children.
- Do not allow children to play with the device or its remote control. Children must be supervised around the unit at all times.
- Do not sit on the unit. Doing so is likely to result in injury from falling or damage to the unit.
- Do not place objects on the unit as this may cause malfunctioning or product damage.
- Do not place or use flammable items, such as spray cans, within 1 meter of the air outlets as this may cause a fire or even an explosion.
- Do not place objects near the outdoor unit as they may inhibit air flow and cause damage. Keep the unit free from leaves and other debris.
- Do not place your fingers or objects in the air inlets or outlets. Contact with the high speed fan blades may lead to personal injury or product damage.
- If an abnormal situation arises such as a burning smell, immediately turn of the unit and disconnect the power. Contact the dealer for further instruction as further operation may lead to electric shock, fire or injury.
- Do not expose plants or animals directly to the airflow from the unit as this may cause adverse effects.
- Avoid impacts to the indoor and outdoor units, or otherwise product damage may result.
- Do not climb onto or place objects on top of the outdoor unit.
- This appliance has wheels. Be careful of obstacles or thick carpets, as the device may tip.

CAUTION

- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of he appliance in a safe way and understand the hazards involved.
- Cleaning and user maintenance shall not be made by children without supervision. It is not a toy.
- Do not place objects that are susceptible to moisture directly beneath the indoor and outdoor units or refrigerant pipes. Under certain conditions, condensation may occur resulting in damage to the object concerned.
- To avoid oxygen depletion, ensure that the room is adequately ventilated if equipment such as a burner or a heater is used together with the air conditioner.
- Do not operate the air conditioner in a wet room such as a bathroom or laundry. Too much exposure to moisture can cause electrical components to short circuit.
- Do not expose your body directly to cool air for a prolonged period of time.
- In certain functional environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.
- Decommissioning may only be carried out by qualified personnel.
- Turn of the air conditioner and disconnect the power if you are not going to use it for a long time.
- Turn off and unplug the unit during storms.
- Do not use device for any other purpose than its intended use.
- Avoid operating the appliance for long periods of time with doors or windows open, or if the humidity is very high.
- Do not use any agents other than those recommended by the manufacturer to speed up the defrosting process or for cleaning.
- Do not place or use the indoor unit of the device outdoors.
- Do not operate during snowfall. After snowfalls, ensure outdoor unit air inlet is not blocked by snow.

Electrical Warning

- Do not operate the appliance with wet hands. This may cause electric shock.
- Do not modify the power cord or plug in any way. If the power cord is damaged, it must be replaced by the manufacturer, a service agent or similarly qualified persons.
- Do not attempt to make any modifications to the wiring or open the control board as it may lead to overheating, fire, electrical shock, injury or death.
- Do not pull on the power cord to unplug unit as this may damage the cord and lead to fire or electric shock. Hold the plug firmly and pull it from the outlet.
- Do not modify the length of the power cord or use an extension cord to power the unit as it may lead to overheating or electric shock.
- If the power cord is damaged, it must be replaced by customer service or a qualified service centre or a qualified electrician in order to avoid hazards.
- Plug the device directly into the wall socket. Do not use power extensions, splitters or multi plug adapters as this may overload the circuitry and cause fire or damage.
- Keep power plug clean. Remove any dust or grime that accumulates on or around the plug. Dirty plugs can cause fire or electric shock.
- Ensure that the connection side is earthed.
- If there is a fault that may affect safety, the system must not be operated until the fault has been rectified.
- Maintenance and repair work on electrical components may only be carried out by an expert.
- Components may only be replaced with parts specified by the manufacturer.
- Improper component replacement can lead to the ignition of refrigerant in the atmosphere due to leakage.
- In the event of damage or malfunctions, please contact your specialist dealer or our customer service.
- Repair and maintenance work on electrical components must include initial safety checks and inspection procedures for the components. If there is a fault that could affect safety, the circuit must not be re-energised until the fault has been satisfactorily rectified.

Caution: Notes to Installation

- Only use the included accessories and specified part for installation. Using non-standard parts can cause water leakage, electrical shock or fire and can cause the unit to fail.
- Install the unit in a stable location that can support its weight. If not done properly,the unit may drop and cause serious injury and damage.
- Install drainage piping according to the instructions in this manual. Improper drainage may cause water damage to your home and property.
- Do not install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it may cause fire.
- Do not turn on the power, until the outside unit has been properly secured. Only move the outdoor unit by holding on to the housing and never carry it by the refrigerant hose.
- Check the appliance at regular intervals for signs of damage.
- Avoid placing stress or torsion on the refrigerant hose. Inspect the hoses periodically and inform customer service if any damage is observed.
- Only operate the device in accordance with the instructions supplied. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- When installing, hold the outdoor unit by the handles provided and not by the hose.
- If the appliance is to be permanently installed or the refrigerant lines need to be extended, a qualified installer must be commissioned.

⚠ Window Bracket

- The window bracket is designed for windows that open inwards with a window ridge width of up to 4.5 cm and height of at least 2 cm. Before installing, first check if the window bracket fits to the window frame.
- To attach the bracket to the window, proceed as described here in the instructions.
- Be particularly careful when installing the system to ensure that all safety measures are observed.
- Ensure that the steel cable is correctly attached to the indoor unit and the window bracket to prevent it from falling.
- When attaching the bracket, be careful not to scratch the masonry or windows.
- Once installed, make sure the two screws are tightened properly and the bracket is secure.
- The bracket must be level (give or take 2°).
- The Outdoor Unit is designed for easy removal and installation. When placing it on the bracket, make sure that the pins snap into place correctly.
- In most cases the bracket does not need to be removed in order to close the window. Ensure that the bracket does not obstruct the window when closing it.
- Remove the bracket and outdoor unit during thunderstorms or strong winds.
- Check the bracket and fasteners at regular intervals to ensure that they are securely in place and undamaged.
- The bracket is only designed for the outdoor unit; any other use is not permitted and can lead to accidents.
- Uninstall the bracket and do not use further if damaged.
- Keep children playing, away from the window bracket.

2. Information on servicing(For flammable materials)

2.1 Checks to the area

- Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.

2.2 Work procedure

- Works shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.

2.3 General work area

- All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. work in confined spaces shall be avoided. The area around the work space shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.

2.4 Checking for presence of refrigerant

- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. no sparking, adequately sealed or intrinsically safe.

2.5 Presence of fire extinguisher

- If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

2.6 No ignition sources

- No person carrying out work in relation to a refrigeration system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which flammable refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. NO SMOKING signs shall be displayed.

2.7 Ventilated area

- Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

2.8 Checks to the refrigeration equipment

- Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt consult the manufacturer's technical department for assistance. The following checks shall be applied to installations using flammable refrigerants:
  - the charge size is in accordance with the room size within which the refrigerant containing parts are

installed;

- the ventilation machinery and outlets are operating adequately and are not obstructed;
- if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant; marking to the equipment continues to be visible and legible.
- markings and signs that are illegible shall be corrected;
- refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

2.9 Checks to electrical devices

- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, and adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include:

- that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking
- that there no live electrical components and wiring are exposed while charging, recovering or purging the system;
- that there is continuity of earth bonding.

2.10 Repairs to sealed components

- During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
- Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.
- Ensure that apparatus is mounted securely.
- Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer's specifications.

NOTE: The use of silicon sealant may inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.

2.11 Repair to intrinsically safe components

- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use. Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.
- Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

2.12 Cabling

- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

2.13 Detection of flammable refrigerants

- Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

2.14 Leak detection methods

- The following leak detection methods are deemed acceptable for systems containing flammable refrigerants. Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25% maximum) is confirmed. Leak detection fluids are suitable for use with most refrigerants but the use of detergents

containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work. If a leak is suspected ,all naked flames shall be removed or extinguished. If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut of valves) in a part of the system remote from the leak. Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

2.15 Removal and evacuation

- When breaking into the refrigerant circuit to make repairs or for any other purpose, conventional procedures shall be used. However, it is important that best practice is followed since flammability is a consideration.
- The following procedure shall be adhered to:
  - remove refrigerant;
  - purge the circuit with inert gas;
  - evacuate;
  - purge again with inert gas;
  - open the circuit by cutting or brazing.
- The refrigerant charge shall be recovered into the correct recovery cylinders. The system shall be flushed with OFN to render the unit safe. This process may need to be repeated several times. Compressed air or oxygen shall not be used for this task. Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipe-work are to take place.
- Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

2.16 Charging procedures

- In addition to conventional charging procedures, the following requirements shall be followed:
  - Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
  - Cylinders shall be kept upright.
  - Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
  - Label the system when charging is complete (if not already).
  - Extreme care shall be taken not to overfill the refrigeration system.
  - Prior to recharging the system it shall be pressure tested with OFN. The system shall be leak tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

2.17 Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken.

In case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.

- Become familiar with the equipment and its operation.
- Isolate system electrically.
- Before attempting the procedure ensure that:
  - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
  - all personal protective equipment is available and being used correctly;
  - the recovery process is supervised at all times by a competent person;
  - recovery equipment and cylinders conform to the appropriate standards.
- Pump down refrigerant system, if possible.
- If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- Make sure that cylinder is situated on the scales before recovery takes place.
- Start the recovery machine and operate in accordance with manufacturer's instructions.
- Do not overfill cylinders. (No more than 80 % volume liquid charge).
- Do not exceed the maximum working pressure of the cylinder, even temporarily.
- When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.

- Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

2.18 Labelling

- Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

2.19 Recovery

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct numbers of cylinders for holding the total system charge are available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order.Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order.
- Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

2.20 Transportation, marking and storage for units

i: Transport of equipment containing flammable refrigerants

- Compliance with the transport regulations

ii. Marking of equipment using signs

- Compliance with local regulations

iii. Disposal of equipment using flammable refrigerants

- Compliance with national regulations

iv. Storage of equipment/appliances

- The storage of the appliance should be in accordance with the applicable regulations or instructions, whichever is more stringent.

v. Storage of packed (unsold) equipment

- Storage package protection should be constructed such that mechanical damage to the equipment inside the package will not cause a leak of the refrigerant charge The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.

Specifications

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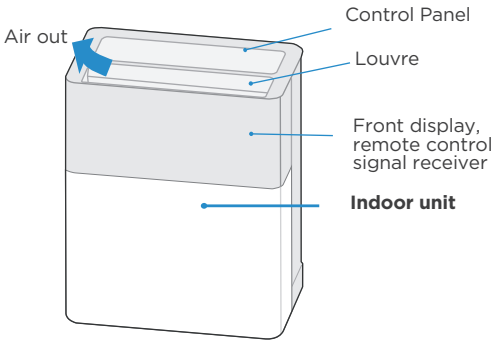
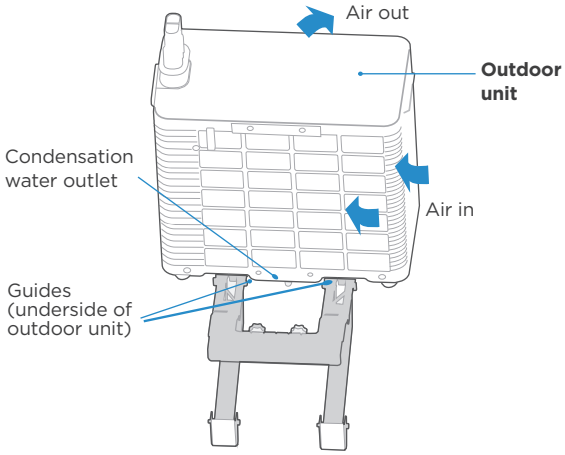
1. Model Reference

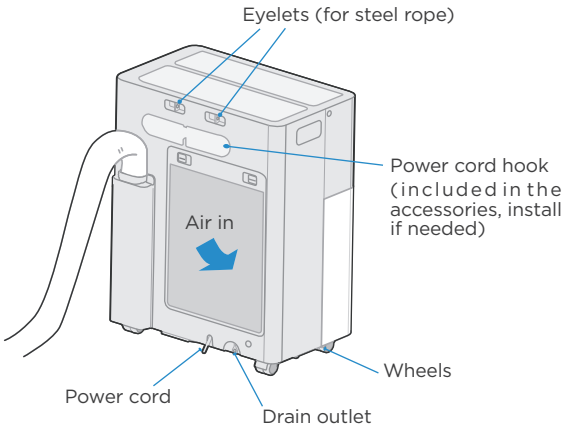
Refer to the following table to determine the specific indoor and outdoor unit model.

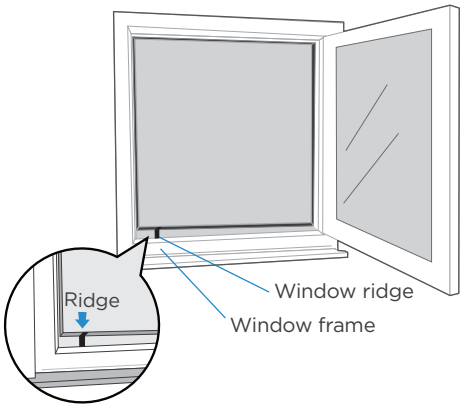
Unit Model	Capacity (Btu/h)	Power Supply
MMCS-08CRN8-QRD0	8k	220-240V~, 50Hz, 1Phase
MMCS-09HRN8-QRD0	9k	
MMCS-12HRN8-QRD0	12k	

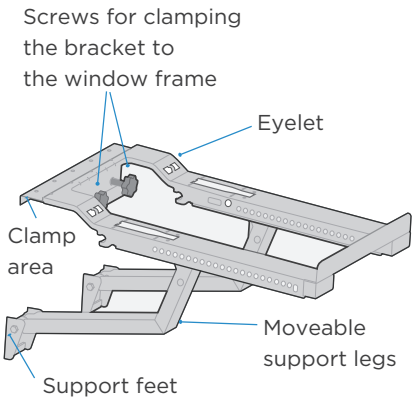
2. Product Overview

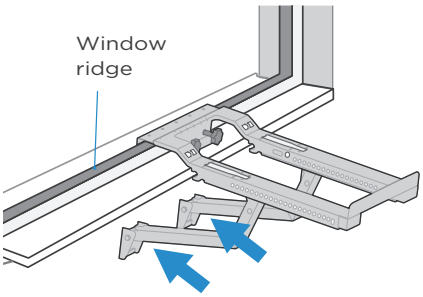










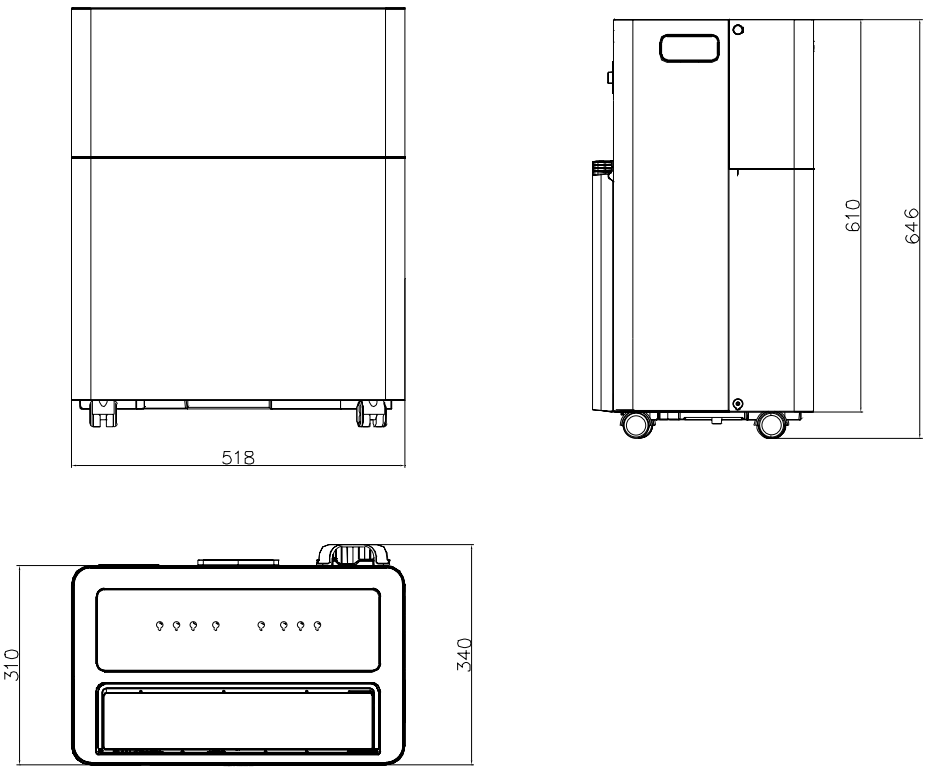


Note: The window bracket is designed for windows that open inwards with a window ridge width of up to 4.5 cm and a height of

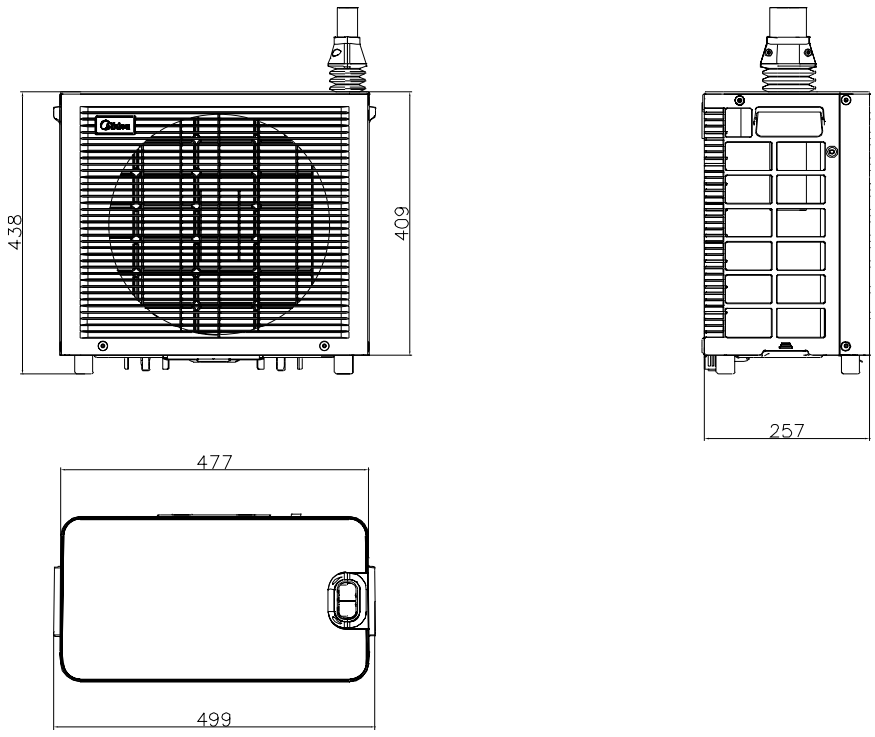
NOTE:Illustrations in this manual are for explanatory purposes. The actual shape of your indoor unit may be slightly difference.

3. Dimension

Indoor Unit

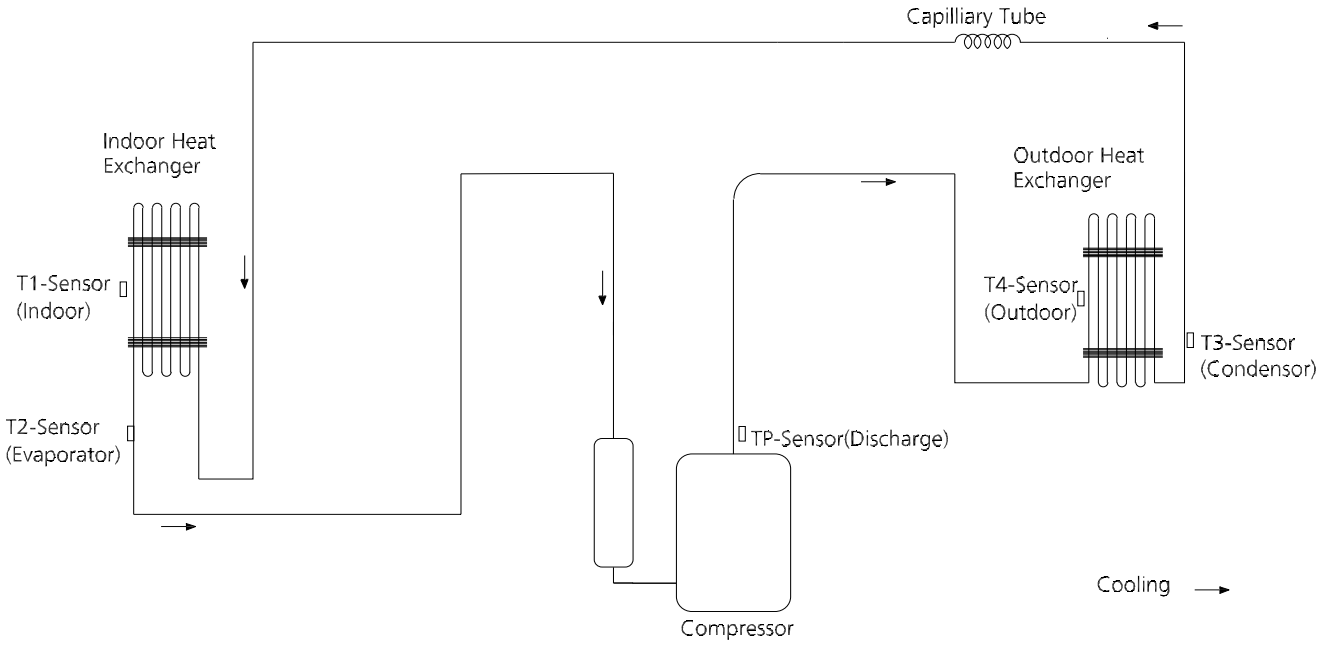


Outdoor Unit

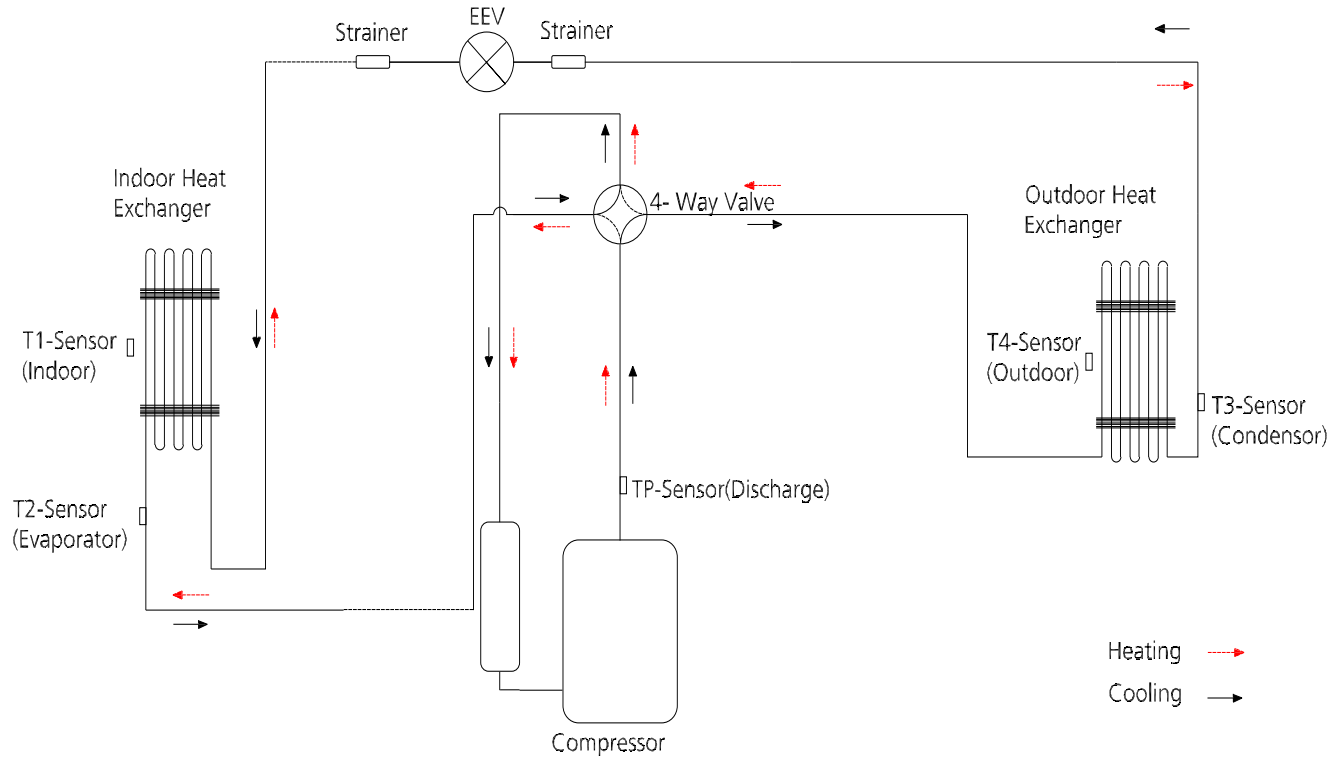


4. Refrigerant Cycle Diagrams

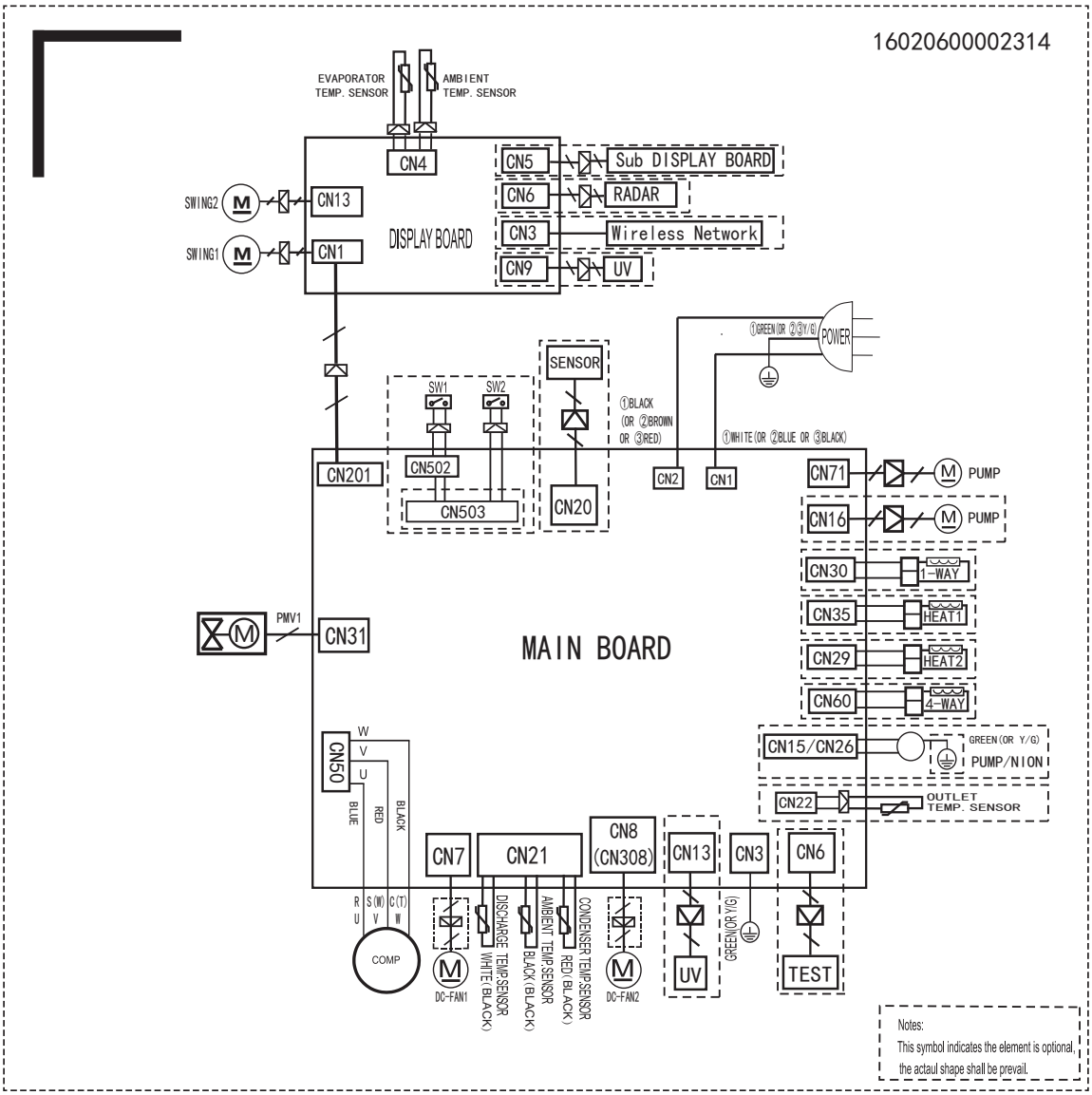
4.1 Cooling only



4.2 Heat pump



5. Electrical Wiring Diagrams



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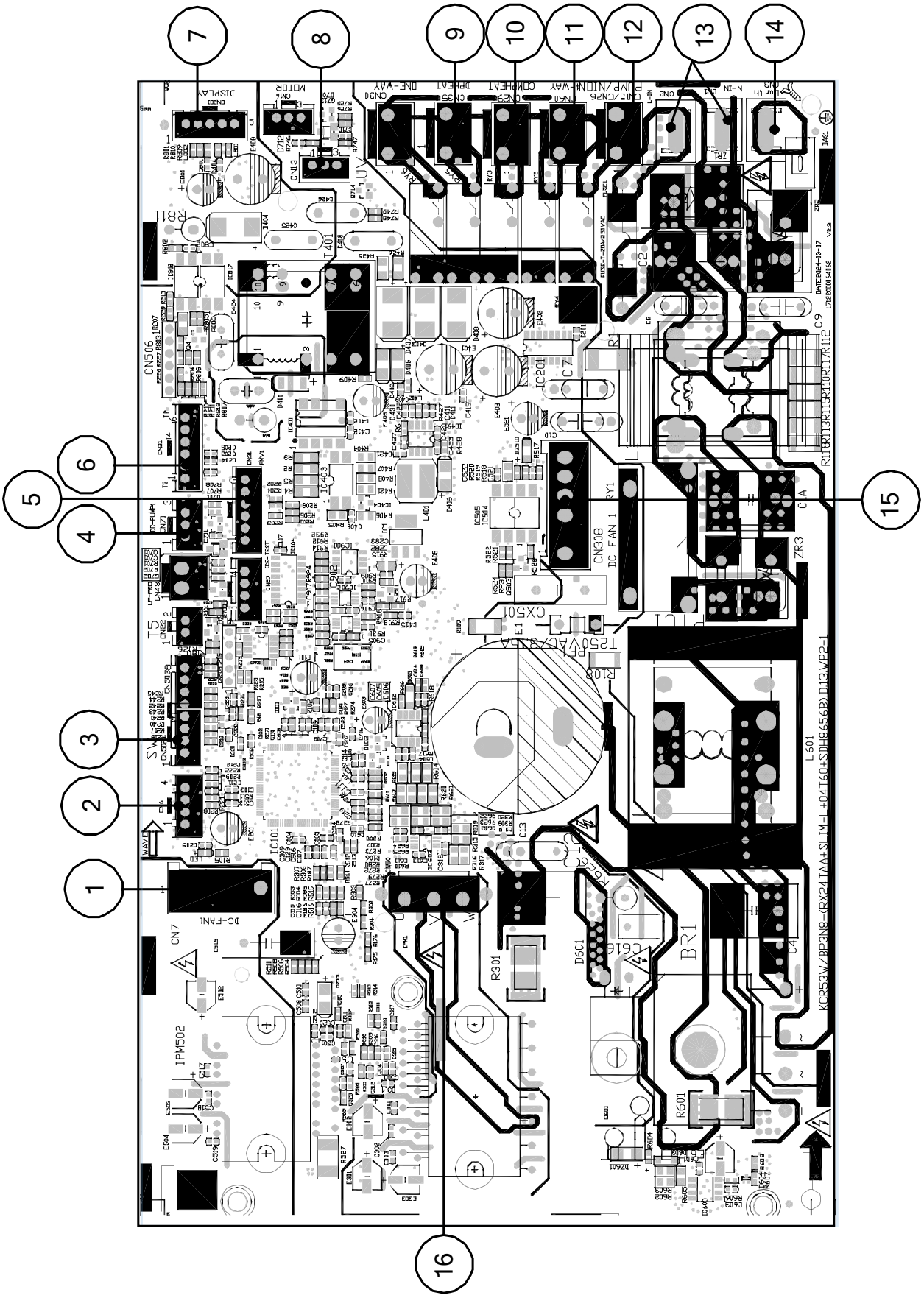

No.	Name	CN#	Meaning
1	DC-FAN	CN7	connect to outdoor DC fan, output 0-300V AC
2	TESTPORT	CN6	used for testing
3	SW	CN502	connect to water level switch
4	PUMP	CN71	connect to pump, output 12V DC
5	PMV1	CN31	connect to electric expansion valve, output 12V DC
6	T3 T4 TP	CN21	connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor TP
7	DISPLAY	CN201	connect to display board, output 12V DC
8	UV	CN13	connect to UV, output 12V DC
9	HEAT_D	CN35	connect to the heater, 208-240V AC when is ON
10	HEAT_Y	CN29	
11	4-WAY	CN60	connect to 4 way valve, 208-240V AC when is ON.
12	PUMP/NION	CN15/ CN26	connect to anion, 208-240V AC when is ON
13	Power Supply	CN2	L_in: connect to L-line (208-240V AC input)
		CN1	N_in: connect to N-line (208-240V AC input)
14	EARTH	CN3	onnect to earth
15	DC-FAN	CN308	connect to indoor DC fan, output 310V DC
16	COMPRESSOR	CN50	connect to compressor, 0V AC (standby),0-300V AC (running)

Note: This section is for reference only. Please take practicality as standard.

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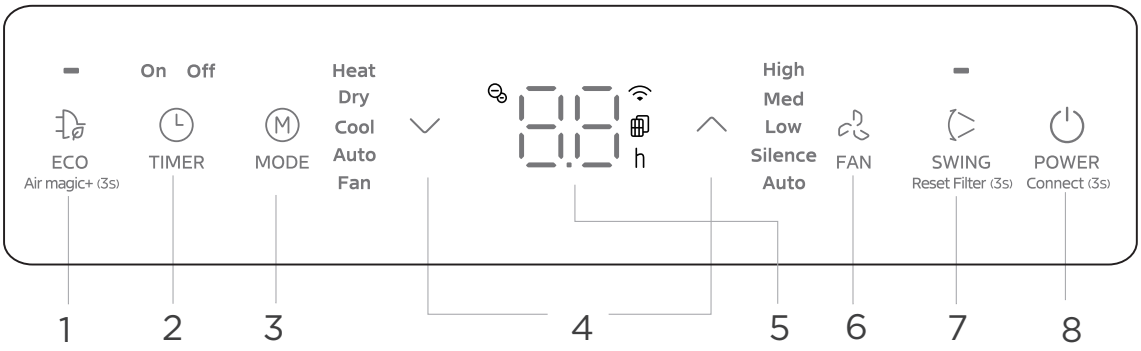
1. Control panel



1 **ECO Button:**
Enable or disable ECO mode.
When in cooling mode, pressing this button will adjust the temperature automatically to 24°C and set the fan speed to Auto to save energy. In ECO mode it is possible change the temperature but not to decrease it to less than 24°.
Note: Pressing the ECO button again, changing the mode or adjusting set temperature to less than 24°C will stop ECO operation.
If ECO mode results in insufficient cooling, press the ECO button again to return to normal operation.

Model dependent. Long press this button for 3 seconds to initiate ION function.

2 **TIMER Button:**
Set timer to turn unit on or off after the desired amount of time. When the device is off, pressing the timer button will set a timer to turn it on. After pressing the timer button, use the up or down arrows to set the desired delay. You can then choose the mode, temperature and fan speed.
When the device is on, pressing the timer button will set a timer to turn it off. After pressing the timer button, use the up or down buttons to set the desired delay.
Note: The up and down arrows change the delay by increments of 30 minutes. A maximum delay of 24 hours is possible.
Turn the device on/off to cancel the timer or use the up/down buttons to change the delay or set to zero to cancel.

3 **MODE Button:**
Several modes are available: Auto, Cool, Heat, Dry and Fan. Each time you press the Mode button, the device will cycle to the next function.

4 **Up and Down Button:**
In normal operation, these buttons are used to increase or decrease the temperature in 1° increments. Long press (about 3 seconds) the Up and Down buttons simultaneously to swop between °C and °F.

5 **Display Window:**
Depending on the function being used it shows the temperature / timer settings / wireless mode or error codes.
It is not possible to set the temperature in Fan mode. The display will show the room temperature.

6 **Fan Button:**
Select your preferred fan speed from Low to High. Alternatively, select Auto for the device to manage fan speed automatically.
Note: On Auto and Dry mode, the fan speed cannot be adjusted manually.

7 **SWING Button:**
Set the louvre to move continuously or stop the louver at the desired angle using the Swing button.
Note: After 250 hours of operation, the filter indicator light will illuminate.
Refer to the Cleaning and Maintenance section for instructions on how to remove and clean the filter.
Once you have cleaned the filter, long press the Swing button to reset the counter to zero.

8 **Power Button:**
Switch the device on or off.
Long press the POWER button for 3 seconds to initiate Access Point (AP) mode if instructed to do so in the SmartHome app. The device will remain in AP mode for several minutes and return to normal operation automatically.

2. Safety Features

Compressor three-minute delay at restart

The compressor must wait 3 minutes before starting each time.

Automatic shutoff based on discharge temperature

If the compressor discharge temperature exceeds a certain level for a period of time, the compressor ceases operation.

Automatic shutoff based on fan speed

If the indoor fan speed registers below 80RPM or over 2400RPM for an extended period of time, the unit ceases operation and the corresponding error code is displayed on the indoor unit.

Inverter module protection

The inverter module has an automatic shutoff mechanism based on the unit's current, voltage, and temperature. If automatic shutoff is initiated, the corresponding error code is displayed on the indoor unit and the unit ceases operation.

Indoor fan delayed operation

- When the unit starts, the louver is automatically activated and the indoor fan will operate after a period of setting time or the louver is in place.
- If the unit is in heating mode, the indoor fan is regulated by the anti-cold air function.

Sensor redundancy and automatic shutoff

- If one temperature sensor malfunctions, the air conditioner continues operation and displays the corresponding error code, allowing for emergency use.
- When more than one temperature sensor is malfunctioning, the air conditioner ceases operation.

3. Basic Functions

3.1 Abbreviation

Unit element abbreviations

Abbreviation	Element
T1	Indoor room temperature
T2	Coil temperature of evaporator
T3	Coil temperature of condenser
T4	Outdoor ambient temperature
Tsc	Adjusted setting temperature
TP	Compressor discharge temperature
TCDE1	Exit defrost temperature1
TCDE2	Exit defrost temperature2 (maintain for a period of time)
TIMING_ DEFROST_TIME	Enter defrost time

In this manual, such as TCDE1, TCDE2, TIMING_DEFROST_ TIME...etc., they are well-setting parameter of EEPROM.

3.2 Fan Mode

When fan mode is activated:

- The outdoor fan and compressor cease operation.
- Temperature control is disabled and indoor room temperature is displayed.
- The indoor fan speed can be set to high, medium, low (panel control) or 1-100%(remote control) or auto.
- The louver operations are identical to those in cooling mode.
- Auto fan: In fan-only mode, AC operates the same as auto fan in cooling mode with the temperature set at 24°C.(Tsc =24°C)

3.3 Cooling Mode

3.3.1 Compressor Control

Reach the configured temperature:

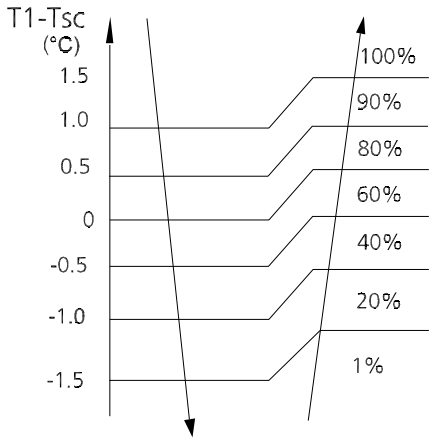
1) When the compressor runs continuously for within 120 minutes.
   - If the following conditions are satisfied, the compressor ceases operation.
     - Calculated frequency(fb) is less than minimum limit frequency(FminC).
     - Compressor runs at FminC more than 10 minutes
     - T1 is lower than or equal to (Tsc-2.5°C)
2) When the compressor runs continuously for more than 120 minutes.
   - If the following conditions are satisfied, the compressor ceases operation.
     - Calculated frequency(fb) is less than minimum limit frequency(FminC).
     - Compressor runs at FminC more than 10 minutes.
     - T1 is lower than or equal to (Tsc-2°C).
3) When the protective time is not reached, the compressor cannot be shut down even if the shutdown conditions are met, but the compressor is kept running at the lowest frequency(FminC). If one of the following conditions is satisfied, not judge protective time.
   - Compressor running frequency(fr) is more than test frequency(TestFre).

- Compressor running frequency is equal to test frequency, T4 is more than 15°C or T4 fault.
- Change setting temperature.
- Turning on/off turbo or sleep function
- Various frequency limit shutdown occurs.

3.3.2 Indoor Fan Control

1) In cooling mode, the indoor fan operates continuously. The fan speed can be set to high, medium, low (panel control) or 1-100%(remote control) or auto.

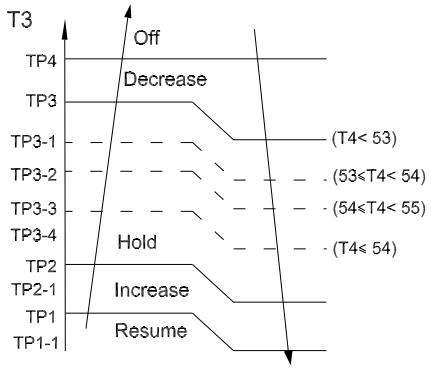
2) Auto fan



3.3.3 Outdoor Fan Control

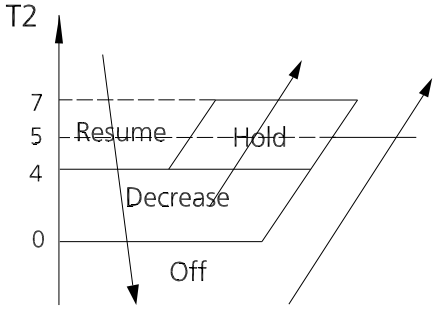
- The outdoor unit will be run at different fan speed according to T4 and compressor running frequency..
- For different outdoor units, the fan speeds are different.

3.3.4 Condenser Temperature Protection



- Off: Compressor stops.
- Decrease: Decrease the running frequency at 1Hz/s.
- Hold: Keep the current frequency.
- Increase: Increase the running frequency at 0.04Hz/s.
- Resume: No limitation for frequency.

3.3.5 Evaporator Temperature Protection



- Off: Compressor stops.
- Decrease: Decrease the running frequency to the lower level per 1 minute.
- Hold: Keep the current frequency.
- Resume: No limitation for frequency.

3.4 Heating Mode(Heat Pump Units)

3.4.1 Compressor Control

1) Reach the configured temperature

- If the following conditions are satisfied, the compressor ceases operation.
  - Calculated frequency(fb) is less than minimum limit frequency(FminH).
  - Compressor runs at FminH more than 10 minutes.
  - T1 is higher than or equal to Tsc+2°C.
- When the protective time is not reached, the compressor cannot be shut down even if the shutdown conditions are met, but the compressor is kept running at the lowest frequency(FminH). If one of the following conditions is satisfied, not judge protective time.
  - Compressor running frequency(fr) is more than test frequency(TestFre).
  - When compressor running frequency is equal to test frequency, T4 is more than 15°C or T4 fault.
  - Change setting temperature.
  - Turning on/off turbo or sleep function.

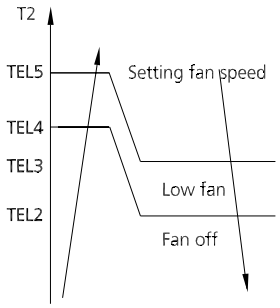
2) When the current is higher than the predefined safe value, surge protection is activated, causing the compressor to cease operations.

3.4.2 Indoor Fan Control:

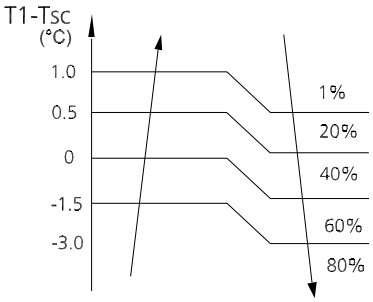
1) In heating mode, the indoor fan operates continuously. The fan speed can be set to high, medium, low (panel control) or 1-100%(remote control) or auto. And the anti-cold wind function has the priority.

- Anti-cold air function
  - The indoor fan is controlled by the indoor unit coil

temperature T2.



2) Auto fan



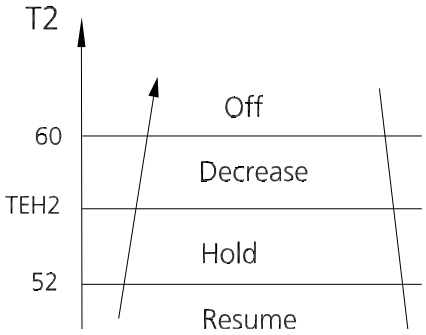
3.4.3 Outdoor Fan Control:

- The outdoor unit will be run at different fan speed according to T4 and compressor running frequency.
- For different outdoor units, the fan speeds are different.

3.4.4 Defrosting mode

- The unit enters defrosting mode according to changes in the temperature value of T3, T4 as well as the compressor running time.
- In defrosting mode, the compressor continues to run, the indoor and outdoor motor will cease operation, the defrost light of the indoor unit will turn on, and the "dF" symbol is displayed.
- If any one of the following conditions is satisfied, defrosting ends and the machine switches to normal heating mode:
  - T3 rises above TCDE1°C.
  - T3 maintained above TCDE2°C for 80 seconds.
  - Unit runs for 15 minutes consecutively in defrosting mode.
- If T4 is lower than or equal to -22°C and compressor running time is more than TIMING_DEFROST_TIME, if any one of the following conditions is satisfied, defrosting ends and the machine switches to normal heating mode:
  - Unit runs for 10 minutes consecutively in defrosting mode.
  - T3 rises above 10°C.

3.4.5 Evaporator Temperature Protection



- Off: Compressor stops.
- Decrease: Decrease the running frequency to the lower level per 20 seconds.
- Hold: Keep the current frequency.
- Resume: No limitation for frequency.

3.5 Auto-mode

- This mode can be selected with the remote controller and the setting temperature can be changed between 16°C~30°C.
- In auto mode, the machine selects cooling, heating, or fan-only mode on the basis of **Δ**T (**Δ**T =T1-TS).

ΔT	Running mode
ΔT>1°C	Cooling
-1°C≤ΔT≤1°C	Fan-only
ΔT<-1°C	Heating*

Heating*: In auto mode, cooling only models run the fan

- Select the operation mode according to the room temperature(T1) and set temperature(Ts), determine the current actual operation mode, and judge once every 15 minutes after the compressor stops.
- If the setting temperature is modified, the machine selects a new running function.

3.6 Drying mode

- In drying mode, AC operates the same as auto fan in cooling mode.
- All protections are activated and operate the same as they do that in cooling mode.
- Low Room Temperature Protection

If the room temperature is lower than 10°C, the compressor ceases operations and does not resume until room temperature exceeds 12°C.

3.7 Forced Cooling Mode

- In standby mode, press and hold the mode button and the power on button at the same time to power on.
- The compressor and outdoor fan continue to run(fixed at rated frequency), and the indoor fan runs at rated speed.
- After running for 30 minutes, the AC will switch to auto mode with a preset temperature of 24°C.

3.8 Sleep function

- The sleep function is available in cooling, heating, or auto mode.
- The operational process for sleep mode is as follows:
  - When cooling, the temperature rises 1°C (to not higher than 30°C) every hour. After 2 hours, the temperature stops rising and the indoor fan is fixed at low speed.
  - When heating, the temperature decreases 1°C(to not lower than 16°C) every hour. After 2 hours, the temperature stops decreasing and the indoor fan is fixed at low speed. Anti-cold wind function takes priority.
- The operating time for sleep mode is 8 hours, after which, the unit exits this mode.
- The timer setting is available in this mode.

3.9 Follow me

- While this function is active, the remote control will send a signal every 3 minutes, with no beeps. The unit automatically sets the temperature according to the measurements from the remote control.
- The unit will only change modes if the information from the remote control makes it necessary, not from the unit's temperature setting.
- If the unit does not receive a signal for 7 minutes or off signal is received, the function turns off. The unit regulates temperature based on its own sensor and settings.

3.10 Auto-Restart function

- The indoor unit has an auto-restart module that allows the unit to restart automatically. The module automatically stores the current settings and, in the case of a sudden power failure, will restore those setting automatically within 3 minutes after power returns.
- If there is a power failure while the unit is running, the compressor starts 3 minutes after the unit restarts. If the unit was already off before the power failure, the unit stands by.

3.11 8°C Heating

- When the air conditioner operates under heating mode with the set temperature of 16°C(60°F), scrolls through operation mode as follows by pressing Temp Down button twice rapidly on the remote control:
- The unit will operate display "FP" and automatically adjust fan and temperature speed to prevent icing over.
- When AC receives signals, such as switch on/off, Sleep mode, mode setting, adjusting the set temperature or fan speed, it will quit the this function.

3.12 Silence

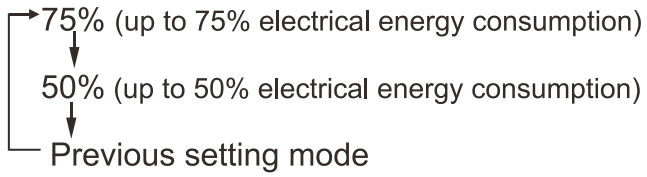
While this function is active, the indoor unit will run at faint breeze(1% fan speed), which reduces noise to the lowest possible level.

3.13 ECO function

- Used to enter the energy efficient mode.
  - Under cooling mode, press ECO button, the remote controller will adjust the temperature automatically to 24°C, fan speed of Auto to save energy (but only if the set temperature is less than 24°C). If the set temperature is more than 24°C and 30°C, press the ECO button, the fan speed will change to Auto, the set temperature will remain unchanged.
- When AC receives signals, such as switch off, Turbo operation , Silence operation , Self clean operation , Forced cooling operation, mode setting, Sleeping mode, or adjusting the set temperature to less than 24°C,it will quit the ECO operation.
- Operation time in ECO mode is 8 hours. After 8 hours the AC quits this mode.
- When there's any one temperature sensor in malfunction, the AC will quit ECO mode .
- Indoor fan will run at auto fan when enter into the ECO mode .The setting temperature and setting fan speed can be changed through remote controller signal.

3.14 Electrical energy consumption control function(Optional)

Press the "Gear" button on remote controller to enter the energy efficient mode in a sequence of following:



Turn off the unit or activate ECO, sleep, Super cool, Silence or self clean function will quit this function.

3.15 Active Clean function

- The Active Clean Technology washes away dust that has adhered to the heat exchanger, by automatically freezing and then rapidly thawing the ice. When this function is turned on, the indoor unit will display the letters "CL".
- The unit will automatically turn off and the Active Clean cycle will terminate. Typically this last between 20-45 minutes..

3.16 ION

- Model dependant. Ionization of the air for better air quality. This is particularly beneficial for asthma sufferers or those with allergies. These functions also reduce odours and help kill bacteria.

3.17 iECO

- Enjoy the benefits of power saving without compromising performance.
- Advanced algorithms and temperature prediction make micro adjustments to the performance, fan speed and humidity settings of the device to achieve the desired temperature and optimise power usage.
- iECO can only be activated via the SmartHome app and the device must remain connected to the wireless network during this time.

3.18 iSense

- This feature that uses a thermostat in the remote control. Performance is adjusted based on this reading as opposed to the thermostat in the inside unit.
- This delivers a more accurate temperature control and can be localised to wherever the remote is placed.
- Press the iSense button on the remote control to activate or deactivate this feature.

3.19 Air Magic+(Optional)

- Functions may include UV air treatment and ionization of the air for better air quality. This is particularly beneficial for asthma sufferers or those with allergies
- These functions also purify the air and eliminate odours and reducing bacteria.

3.20 Wireless Control (Optional)

- Wireless control allows you to control your air conditioner using your mobile phone and a Wireless connection.
- For the USB device access, replacement, maintenance operations must be carried out by professional staff.

Installation and Use Notice

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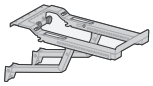
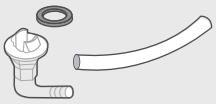
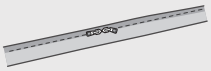
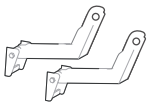
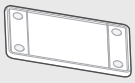
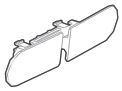
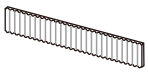
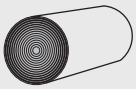
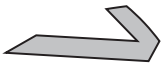
1. Accessories

The air conditioner comes with the following accessories. Improper installation may result in water leakage, electrical shock, fire or damage to the device.

Accessories	Qty	Image	Accessories	Qty	Image
Manual	1-2		Remote control	1	
Window locks	1		Batteries (country specific, may not be included)	2	
Hook and loop	1		Mounting bracket	1	
Drainage pipe, connector and seal	1		Window sealing cloth	1	
Rubber wheel stopper	2		Shorter support legs	2	
Protection plate	1		Steel rope	1	
Power cord hook	1		HEPA filter (optional)	1	
Eyelet for outdoor unit	1		Insulation sponge	1	
Window sealing spong	1				

The following equipment is recommended:

Gloves

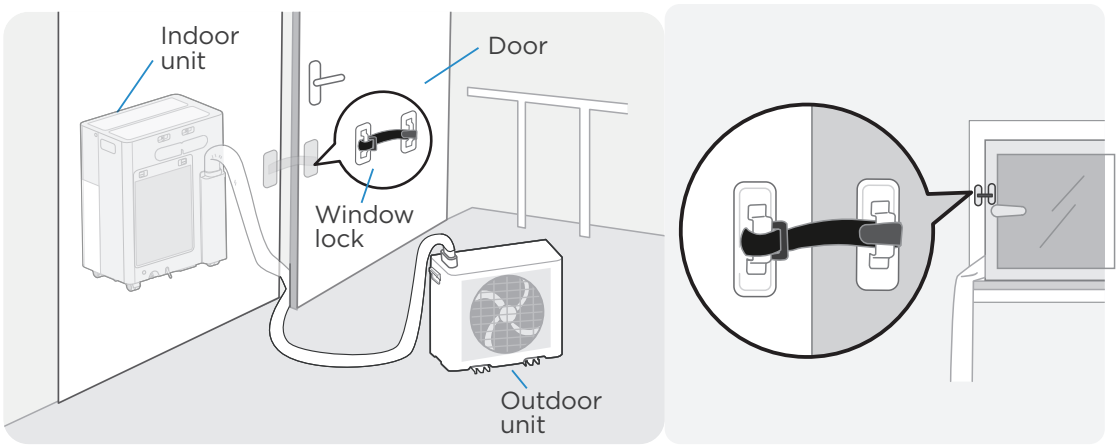
A tape measure

Scissors or Knife

2. Product Installation

2.1 Normal Installation

To use the heating or cooling function, place the Outdoor Unit ourside. A window lock is included to hold the window or door in place and prevent too much air from escaping. Plug the Indoor Unit in and you are ready to go!

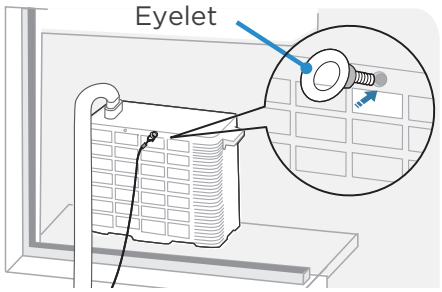


Note: Ensure that exterior area next to your window or door has sufcient place for installing the Outdoor Unit.

Make sure that the installation surface is level.

The Outddor unit is equipped with an eyelet (included in the box) for additional safety to avoid movement due to possible unevenness of the ground surface.

Do not hang the unit on the steel rope.

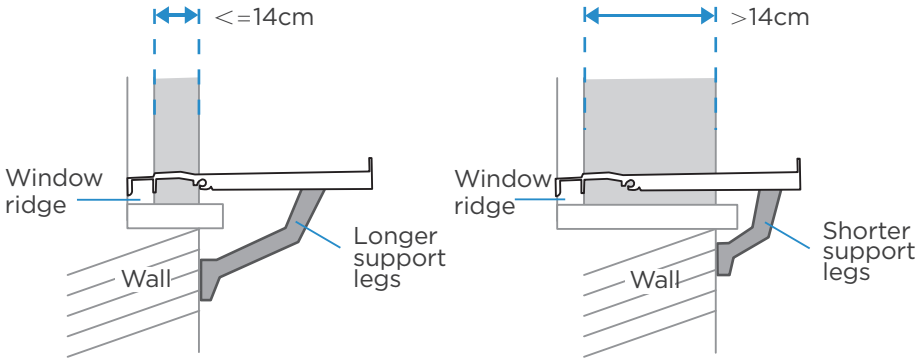


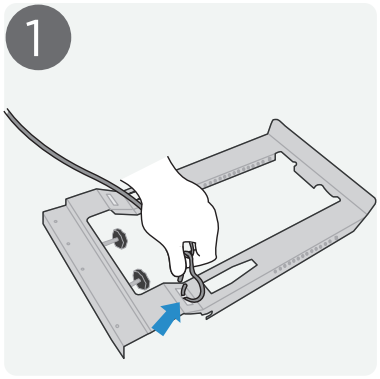
2.2 Bracket Installation

⚠Caution

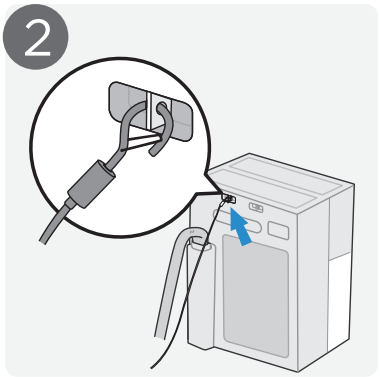
- To avoid serious injury to people below or damage to property, the bracket must be secured with the steel rope provided, before installation. Additionally, during the entire installation process of the bracket, the bracket must always be held by one hand to prevent it from falling.
- Regarding the positioning of the outdoor unit and bracket, you should always observe the local regulations and standards. The window frame and the wall must be able to support the weight of the bracket and outdoor unit.

If the distance between the outside of the window ridge and the outside of the wall, as illustrated below, is more than 14cm, you may need to use the shorter support legs provided.

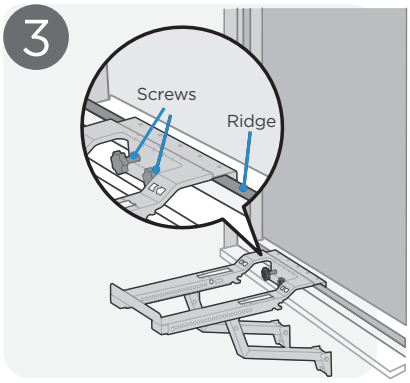




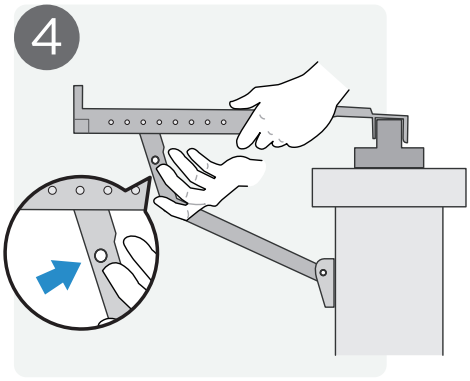
Attach one end of the steel rope provided to the eyelet on the bracket.



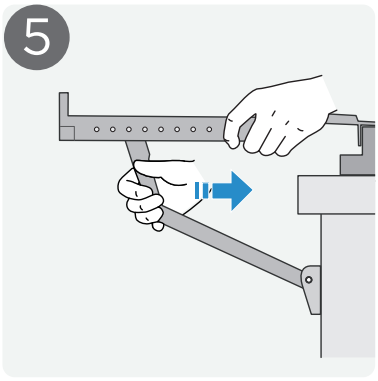
Secure the other end of the steel rope with the eyelet at the back of the indoor unit.



Place the clamp area of the bracket over the window ridge. Pretighten the screws for some stability.

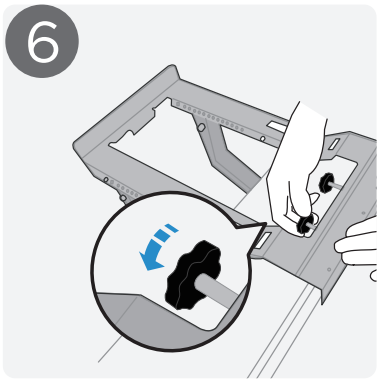


Press the button clips in the support legs inwards as these will release the locking pins in the bracket.



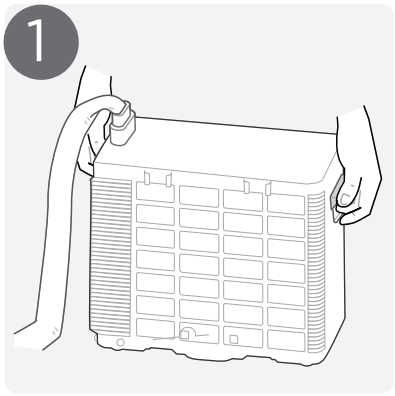
Pull the support legs until the feet have made contact with the wall.

Try to keep the bracket close to level (+/-2°).

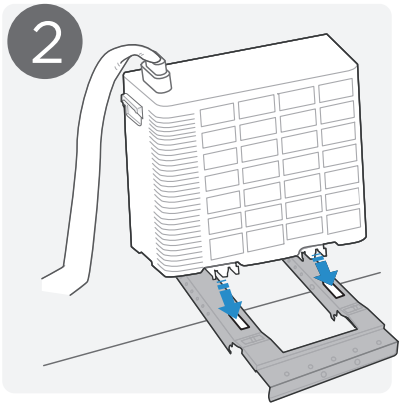


Tighten the screws in the clamp area until firmly fixed against the window ridge.

2.3 Outdoor Unit Installation

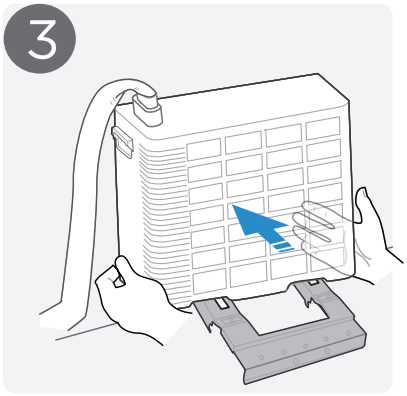


Lift the outdoor unit with two hands using the handles provided.



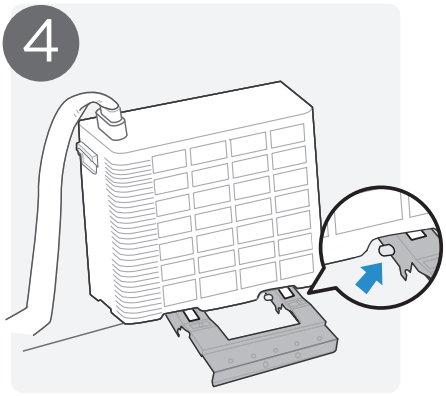
There are guides located on the underside of the outdoor unit.

Align these guides with the bracket holes shown in the diagram and place the outdoor unit on the bracket.



Ensure that the guides are inserted into the corresponding holes.

Position your hands in the middle of the unit, on the sides. Push the unit forward slowly without tilting it.



The pins should snap into place with a click. Check that they have passed through the bracket, locking the outdoor unit in place.

The front of the unit should have slid into the corresponding slot in the bracket, preventing it from lifting up.

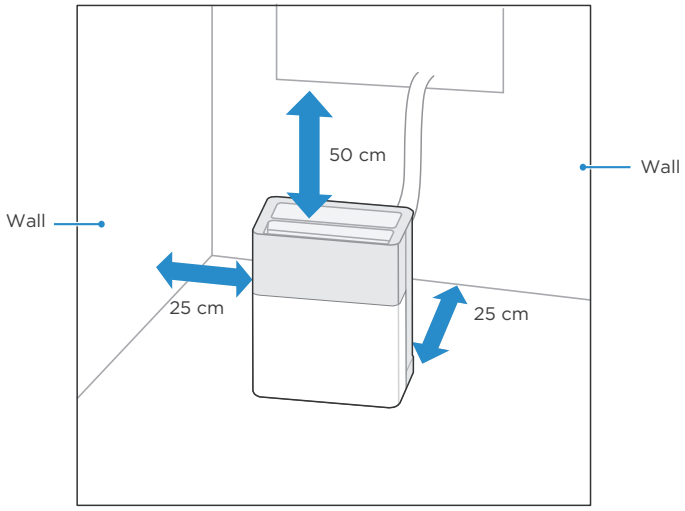
Test that it is firmly in place by trying to move it gently. The steel cable may now be removed from the bracket.

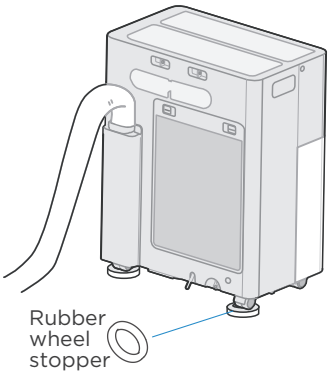
2.4 Indoor Unit Positioning

Do not cover the intakes or outlets of the units, as this could cause damage.

The back side of the indoor unit of the PortaSplit must be placed at least 25 cm away from the wall during use to allow for adequate ventilation of the device. There should be no obstruction within 50cm of the top of the device.

NOTE: If you want the machine to stay still, you can put the two rubber wheel stoppers in the accessories bag under the rubber wheels.

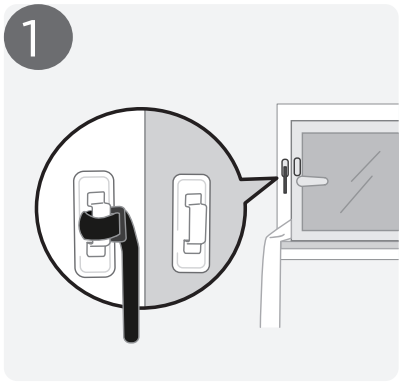




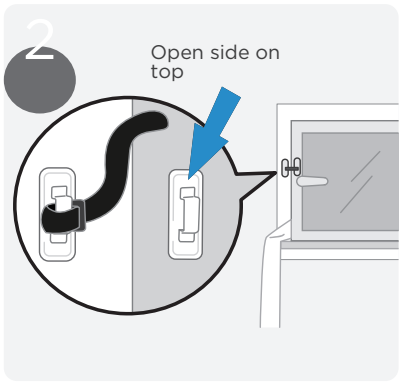
2.5 Window Lock Installation (Optional)

NOTE: If you would prefer not to use the window sealing cloth, a window lock system is provided, to minimize the window gap.

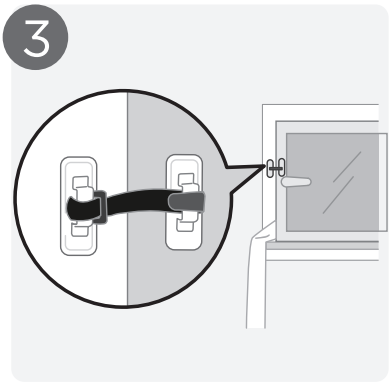
Determine where to install the window lock system. Ideally, it should be away from the window handle but still easily within reach. See the example below of a typical placement.



Stick one plastic mount on the window frame and the other on the window sash.



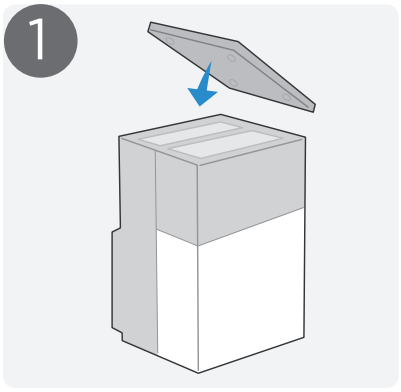
Pass the strip through the second plastic mount on the window sash.



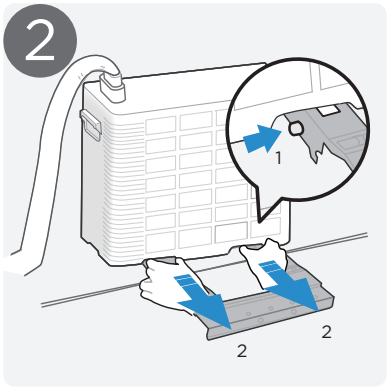
Fold the strip back on itself and stick the hook and loop together.

2.6 Outdoor Unit Deinstallation

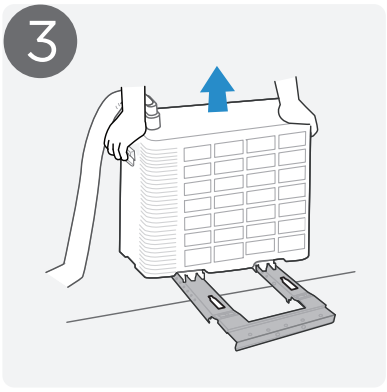
NOTE: When not in use for an extended period of time or for use in a different location, follow these steps toremove the outdoor unit.



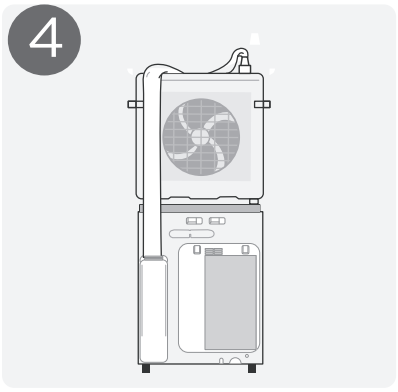
Place the protection plate on top of the indoor unit.



Using your thumbs, press the locking pins in (on both rails). Pull the guides toward yourself.



Once the locking pins are no longer securing the outdoor unit, you should be able to raise the unit, using the handles provided.



Place the outdoor unit on top of the protection plate.

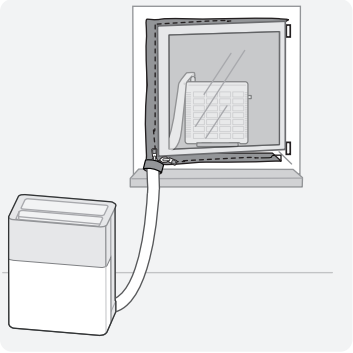
⚠ Warning

- Please transport the unit carefully.
- This should not be done be children.
- Place on a level surface. Uneven or inclined surfaces may cause the unit to move and result in injury or damage.
- To reduce risk of damage to the device, store vertically as shown in figure 4.

NOTE:With most window types, the window can be closed even when the bracket is installed. If you want to uninstall the bracket, attach the steel rope, unscrew both screws and simply lift the bracket and bring it inside. When removing the bracket, always hold with at least one hand to prevent it from falling.

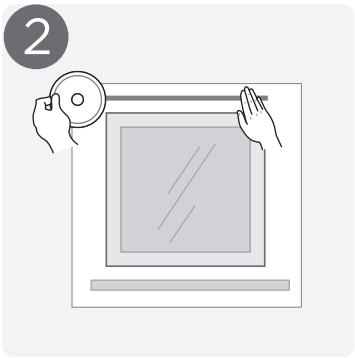
2.7 Sealing Cloth Installation (Optional)

NOTE: For better insulation, a window sealing cloth is provided. You can install the window sealing cloth and pass the refrigerant hose through the zipper. In order to prevent rainwater from flowing down the refrigerant hose to the room on rainy days, wrap the sealing sponge in the accessories on the refrigerant hose as shown in the picture below.

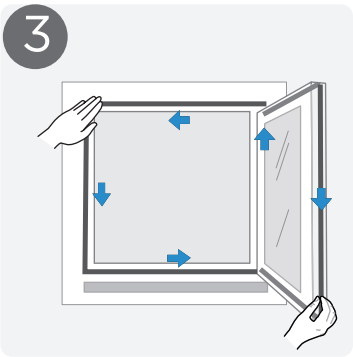


Example of an installed sealing cloth.

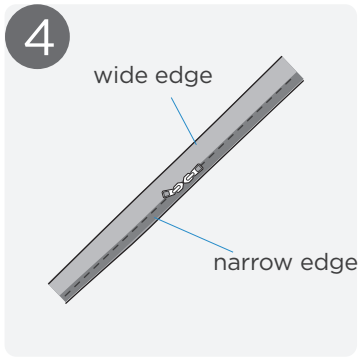
You will need a scissors to install the “hook and loop” strips.
Uninstall the outside device if installed. The bracket can however, remain in place.



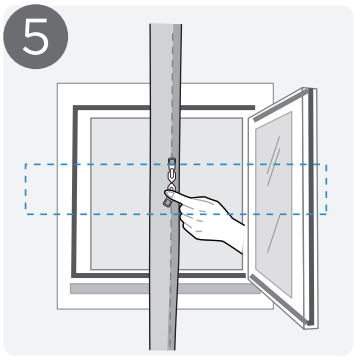
Ensure the window frame is clean.
Close the window. Measure and cut the strips to run the length of the sash and the window frame along the sides where there will be a gap.



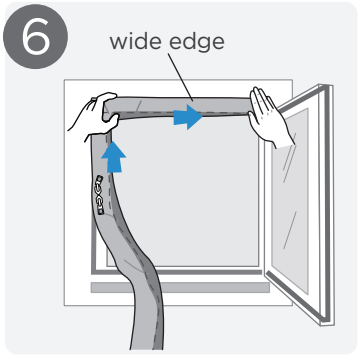
Stick the strips on the window frame and window sash.
It may be easier with the window closed to make alignment easier.



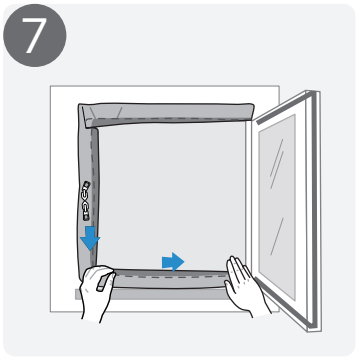
The sealing cloth is asymmetrical along the length of the zip.
The narrower side should run along the window sash and the wider side should run along the window frame.



Align the middle of the sealing cloth with the middle of the opening side of the window frame.
Remember to attach the wide edge to the window frame.



Connect the hook and loop from the middle upwards and then along the top length.

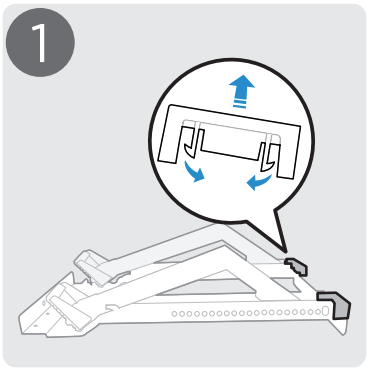


Then do the same for the lower and bottom lengths. Repeat the process for the narrow edge and the window sash.

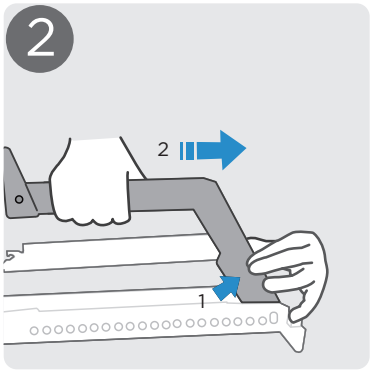
Reinstall the outdoor unit as per the Outdoor Unit Installation section. Zip the sealing cloth up and you’re all set.

2.8 Shorter Support Legs installation (Optional)

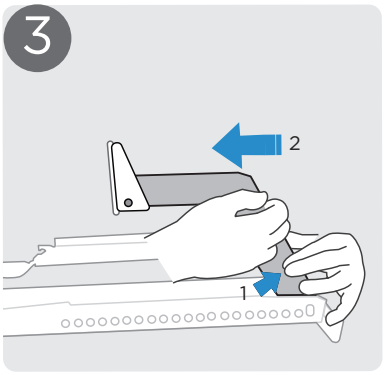
NOTE: For most window profiles, the installed support legs are suitable. For windows with a larger distance from window ridge to the wall (approximately 14cm), the support legs can be substituted with the shorter support legs provided.



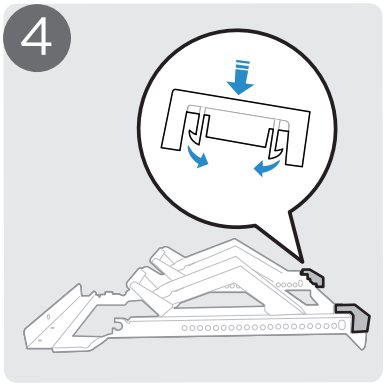
Remove the safety stopper at the end of the bracket. To do so, release the locking mechanisms.



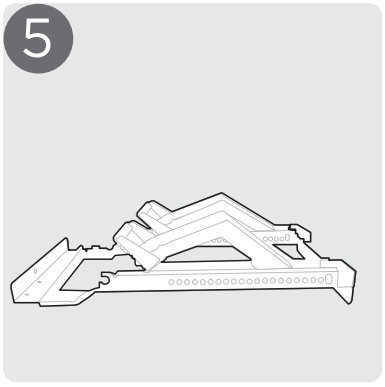
Press in the button clips on the support legs to release the locking pins and slide the support legs out.



Slide the shorter support legs in.



Replace the safety stopper.

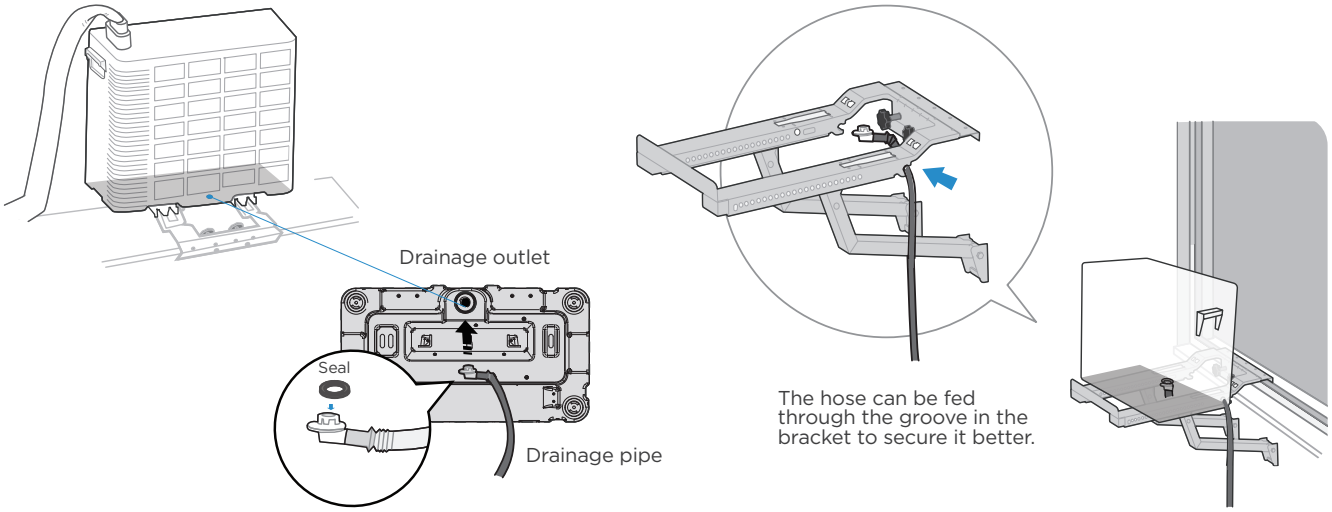


The bracket is ready to be installed.

2.9 Condensation Water

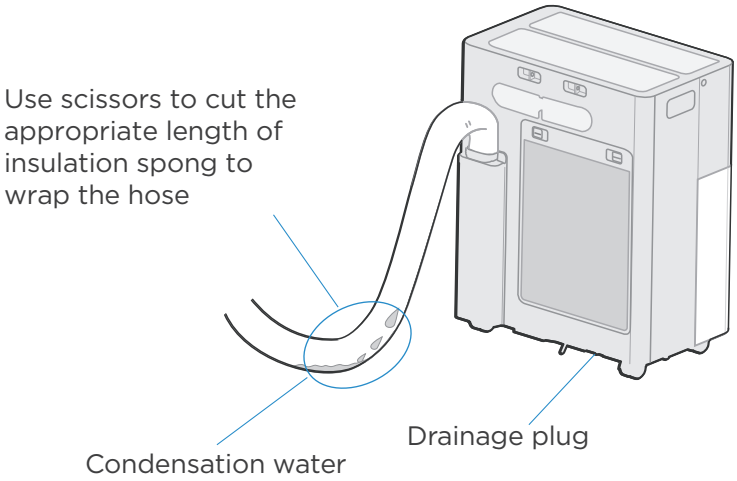
During both heating and cooling operation, condensation water will be discharged from the outdoor unit drainge outlet, at the bottom of the unit.

Insert the drainage pipe into the drainage hole in the base pan of the unit. It will click into place. Adjust the drainage pipe as required, to allow the condensation water to be directed to a suitable location.



NOTE:

- It is normal for the indoor unit to produce condensation. This is contained within the unit and automatically pumped to the outside unit. The indoor unit also has a drainage outlet, allowing you to manually drain any condensate not yet pumped to the outside unit, should you wish to do so. An example of this may be before placing the unit into storage, or if a water pump drainage malfunction occurs.
- Lastly, during heating mode, condensation water may also collect on the hose between the indoor and outdoor units. This can not be drained by the system. Please regularly check the hose and wipe dry if needed. To prevent the condensation water from falling to the floor of the room, wrap the insulation sponge in the accessory around the hose.



3. Quick Start Guide

Once installed, the device is ready to be used. Simply plug the device directly into an electrical outlet and operate from the control panel, the remote control provided or the SmartHome app.

3.1 Control Panel:

1.Press the power button to turn on the device.

2.Use the mode button to switch between Auto, Cool, Heat, Dry and Fan modes.

3.Use the temperature control buttons to set the desired temperature (not applicable to fan or dry modes).

4.Use the fan speed button to adjust the speed of the fan.

5.Use the timer button to set the AC to turn on or off after a certain amount of time.

3.2 Remote Control:

1.Insert batteries to power the remote control (not included in all regions).

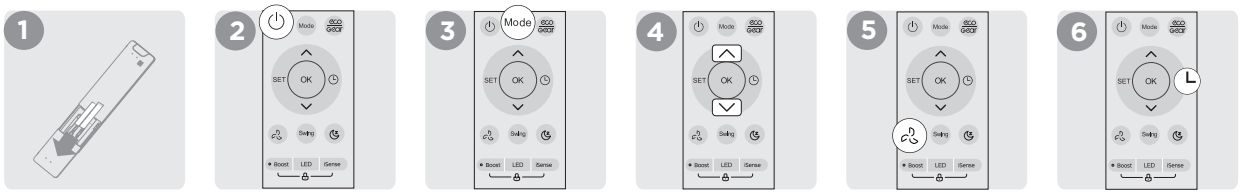
2.Point the remote control at the AC and press the power button to turn it on.

3.Use the mode button to switch between cooling, heating, dry and fan-only modes.

4.Use the temperature control buttons to set the desired temperature.

5.Use the fan speed button to adjust the speed of the fan.

6.Use the timer button to set the AC to turn on or off after a certain amount of time.



3.3 SmartHome App Control:

1.Download the SmartHome app and register an account if you do not have one already.

2.Ensure that Bluetooth is enabled on your phone and that you are connected to the wireless network.

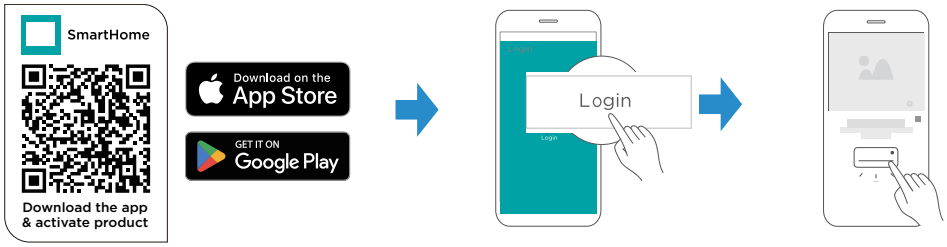
3.Switch the PortaSplit on.

4.In the app, follow the on-screen instructions to configure your device.

5.Use the app to control the temperature, mode, fan speed and timer from anywhere.

6.Many other additional features are available in the app, such as scheduling, energy consumption visualisations and more.

7.For more detailed instructions on how to configfure your device, refer to the SmartHome App section below.



4. Cleaning and Maintenance

4.1 Cleaning the Air Filter

Remove the Air Filter

Grasp the handle on the top of the filter located at the back of the machine with both hands, apply downward pressure, and then pull outwards to remove.

Maintenance Tips

Be sure to clean the air filter when the filter indicator light illuminates, for optimal performance.

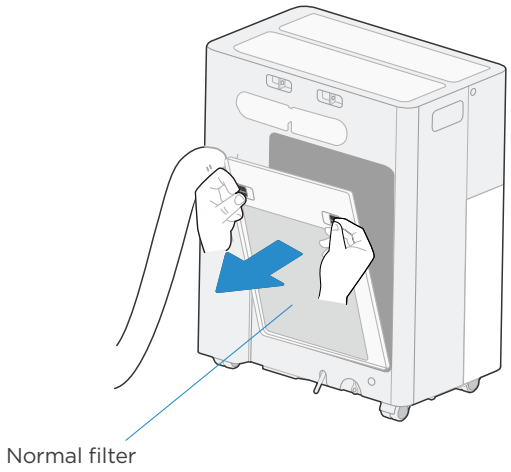
If you have pets in your home, you may need to periodically wipe down the grill to prevent blocked airflow due to animal hair.

Normal filter: Wash the normal filter by immersing it gently in warm water (40°C / 104°F) with a neutral detergent.

Rinse the filter and allow to dry (avoid direct sunlight).

Clean every two weeks for optimal performance.

HEPA Filter: Do not wash with water. See HEPA Filter section below.



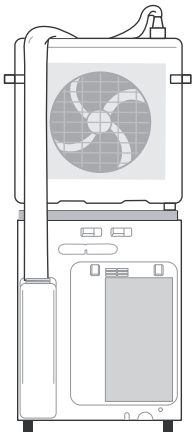
4.2 Cleaning the Unit

Clean the unit using a damp, lint-free cloth and mild detergent. Dry the unit with a dry, lint-free cloth.

Never use harsh cleansers, wax or polish on the unit.

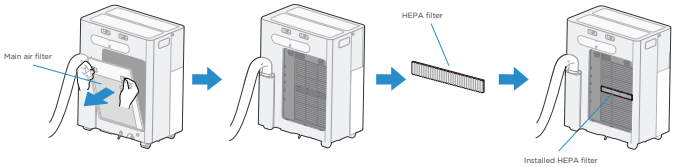
4.3 Store the Unit When Not in Use

- Turn off the appliance and unplug it.
- Clean the air filter according to the instructions in the previous section. Reinstall the clean, dry filter before storing.
- Place the protection plate on top of the indoor unit. Deinstall the outdoor unit and place it on the protection plate.
- Remove the batteries from the remote control.



4.4 HEPA Filter (Optional accessory)

- First remove the main air filter
- Install in the allotted space behind the main air filter
- "HEPA filter: Replace every 6 months. Can be cleaned with a hair dryer (cold air only) or a furniture brush. Do not wash with water.



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1. Safety Caution

WARNING

Be sure to turn off all power supplies or disconnect all wires to avoid electric shock.
While checking indoor/outdoor PCB, please equip oneself with antistatic gloves or wrist strap to avoid damage to the board.

WARNING

Electricity remains in capacitors even when the power supply is off.
Ensure the capacitors are fully discharged before troubleshooting.

2. General Troubleshooting

2.1 Error Display (Indoor Unit)

The error codes are described in the following tables:

Display	Information	Solution
CL	Active clean	Normal Display, not error code
FP	Heating in room temperature under 8°C	
AP	AP mode of WIFI connection	
EH00	Display board EEPROM malfunction	TS10
EH03	The indoor fan speed is operating outside of the normal range	TS12
EC51	Main control board EEPROM malfunction	TS11
EC52	Condenser coil temperature sensor T3 is in open circuit or has short circuited	TS15
EC53	Outdoor ambient temperature sensor T4 is in open circuit or has short circuited	TS15
EC54	Compressor discharge temperature sensor TP is in open circuit or has short circuited	TS15
EH60	Indoor room temperature sensor T1 is in open circuit or has short circuited	TS14
EH61	Evaporator coil middle temperature sensor T2 is in open circuit or has short circuited	TS14
EH4A	Pump malfunction and water full protection	TS24
EC07	The outdoor fan speed is operating outside of the normal range	TS12
EH0b	Main PCB/Display board communication error	TS16
EHbE	Communication error between radar and display board or radar fault	TS17
ELOC	System lacks refrigerant	TS18
PC00	IPM malfunction or IGBT over-strong current protection	TS19
PC01	Over voltage or over low voltage protection	TS20
PC02	Top temperature protection of compressor or High temperature protection of IPM module	TS21
PC04	Inverter compressor drive error	TS22
P1	Water full protection	TS23

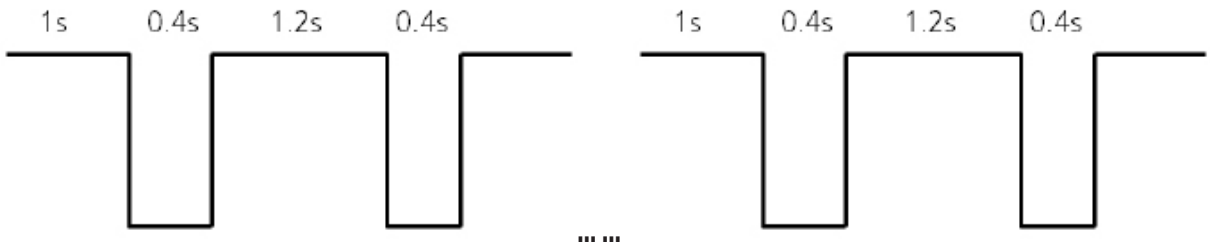
For other errors:

The display board may show a garbled code or a code undefined by the service manual. Ensure that this code is not a temperature reading.

Troubleshooting:

Test the unit using the remote control. If the unit does not respond to the remote, the indoor PCB requires replacement. If the unit responds, the display board requires replacement.

88 flash frequency:


1s
0.4s
1.2s
0.4s
1s
0.4s
1.2s
0.4s

3. Information Inquiry

- In order to enter to the engineering mode, and check the data of the system (data checking mode), Please make the following steps:
- 1- Make sure that the AC is on the standby status, or working normally in a non-locked conditions.
- 2- Press "Power" + "Fan" buttons together for 7s until the remote controller screen shows "0", and also "Auto, Cool, Dry, Heat, Battery " icons will be displayed at the same time or press "MODE"+"UP"+"DOWN" for 5s on control panel.
- 3- Press "Up" or "Down" button to choose different channel number that you want to check (from 0-30) on the remote controller, and then the display will show the parameter value.If you use the control panel, you can query 239, 238& 237 by pressing the down button on channel 0.

Please note that:

1-The Channel number indicates a certain parameter value (Check the below table).

2-The indoor unit display will show the code for 2s, and then the parameter value.

3-In the engineering mode, the other keys or operations are invalid except for the following buttons "Power", "Up", "Down" , and "Ok".

4-In order to exit from the engineering mode, press "Power" + "Fan" buttons together for 2s to quit Checking and back to the home screen.

5-The engineering mode will be exited if there is no valid input data for 60s.

Channel	Code	Query Content	Additional Notes
0		Error code	
1	T1	Room temperature	Actual data, °C
2	T2	Indoor coil temperature	Actual data, °C
3	T3	Outdoor coil temperature	Actual data, °C
4	T4	Ambient temperature	Actual data, °C
5	TP	Discharge temperature	Actual data, °C
6	FT	Targeted frequency	Actual data(Hz)
7	Fr	Actual frequency	Actual data(Hz)
8	dL	Running current	3.2A=3(A)
9	Uo	AC voltage	
10	Sn	Reserved	
11	nR		
12	Pr	Outdoor fan speed	Actual data/8
13	br	EXV opening steps	Actual data/8
14	ir	Indoor fan speed	Actual data/8
15	Hu	Humidity (if a sensor there)	Actual data, %
16	TT	Set temperature including compensation	Actual data, °C
17	SH	Reserved	
18	iF	WIFI signal strength	0-4
19	FL	Filter time	
20	oT	Target Frequency calculated by indoor	Without limitation
21	rn		

22	oE	Main control EEPROM parameter version	
23	oR	Main control program version	
24	iE	Display EEPROM parameter version	
25	iR	Display program version	
26	US	Current OTA Status	
27	nR	Reserved	N/A
28			
29			
30			

- If you use the control panel, you can query 239, 238& 237 by pressing the down button on channel 0.

Channel	Code	Query Content	Additional Notes
239	EF	Real-time power	
238	EE	Current operating power	
237	Ed	Total power	

Error code of engineer mode

Display	Error Information
EH00	Indoor EEPROM malfunction
EH31	Over low voltage protection of indoor external fan
EH32	Over high voltage protection of indoor external fan
EH03	The indoor fan speed is operating outside of the normal range
EC51	Outdoor unit EEPROM parameter error
EC52	Condenser coil temperature sensor T3 is in open circuit or has short circuited
EC53	Outdoor ambient temperature sensor T4 is in open circuit or has short circuited
EC54	Compressor discharge temperature sensor TP is in open circuit or has short circuited
EC55	Outdoor IPM module temperature sensor fault
EH60	Indoor room temperature sensor T1 is in open circuit or has short circuited
EH61	Evaporator coil temperature sensor T2 is in open circuit or has short circuited
EH4A	Pump malfunction and water full protection
EC07	The outdoor fan speed is operating outside of the normal range(
EH0b	Indoor PCB/Display board communication error
EHbE	Communication error between radar and display board or radar fault
ELOC	System lacks refrigerant
FHOP	Wireless module self-test failure

FH12	Pump malfunction
PC00	IPM malfunction or IGBT over-strong current protection
PC10	Over low voltage protection
PC11	Over voltage protection
PC12	DC voltage protection
PC02	Top temperature protection of compressor or High temperature protection of IPM module
PC40	Pressure protection
PC41	Current Input detection protection
PC42	Compressor start error
PC43	Lack of phase (3 phase) protection
PC44	No speed protection
PC45	341PWM error
PC46	Compressor speed malfunction
PC49	Compressor over current protection
PC06	Compressor discharge temperature protection
PC08	Outdoor current protection
PH09	Anti-cold air in heating mode
P1	Upper water full protection
PHR1	Lower water full protection
PC0F	PFC module malfunction
PC0L	Outdoor ambient temperature too low
PH90	Evaporator coil temperature over high protection
PH91	Evaporator coil temperature over low Protection
PC0R	Condenser coil temperature over high protection
LH00	Frequency limit caused by T2(L0)
LC01	Frequency limit caused by T3(L1)
LC02	Frequency limit caused by TP(L2)
LC05	Frequency limit caused by voltage(L5)
LC03	Frequency limit caused by current(L3)
LC06	Frequency limit caused by PFC
LH07	Frequency limit caused by remote controller
nR	no malfunction or protection

4. Quick Maintenance by Error Code

If you do not have the time to test which specific parts are faulty, you can directly change the required parts according the error code. You can find the parts to replace by error code in the following table.

Part requiring replacement	Error Code								
	EH00	EH03	EH60	EH61	EH0b	EL0C	EH4R	EHbE	P1
Main PCB	x	✓	x	x	✓	x	✓	x	✓
Display board	✓	x	✓	✓	✓	✓	x	✓	x
Indoor fan motor	x	✓	x	x	x	x	x	x	x
T1 sensor	x	x	✓	x	x	x	x	x	x
T2 Sensor	x	x	x	✓	x	✓	x	✓	x
Pump	x	x	x	x	x	x	✓	x	x
Radar	x	x	x	x	x	x	x	✓	x
Water Level Switch	x	x	x	x	x	x	x	x	✓
Additional refrigerant	x	x	x	x	x	✓	x	x	x

Part requiring replacement	EC53	EC52	EC54	EC51	EC07	PC00	PC01	PC02	PC04
Main PCB	✓	✓	✓	✓	✓	✓	✓	✓	✓
Outdoor fan motor	x	x	x	x	✓	✓	x	✓	✓
T3 Sensor	x	✓	x	x	x	x	x	x	x
T4 Sensor	✓	x	x	x	x	x	x	x	x
TP Sensor	x	x	✓	x	x	x	x	x	x
Compressor	x	x	x	x	x	✓	x	x	✓
IPM module board	x	x	x	x	x	✓	✓	✓	✓
Additional refrigerant	x	x	x	x	x	x	x	x	x

5. Troubleshooting by Error Code

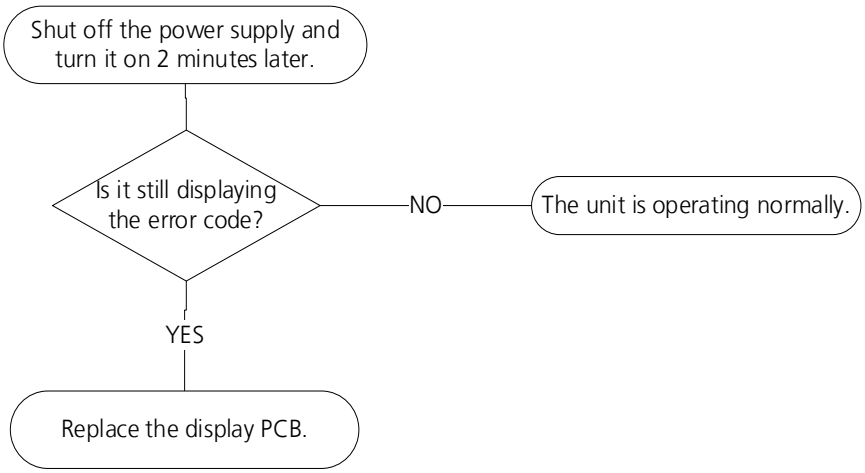
5.1 EH00(Display board EEPROM malfunction) diagnosis and solution

Description: Display PCB main chip does not receive feedback from EEPROM chip.

Recommended parts to prepare:

- Display PCB

Troubleshooting and repair:


Shut off the power supply and turn it on 2 minutes later.
Is it still displaying the error code?
NO
The unit is operating normally.
YES
Replace the display PCB.

Remarks:
EEPROM: A read-only memory whose contents can be erased and reprogrammed using a pulsed voltage.

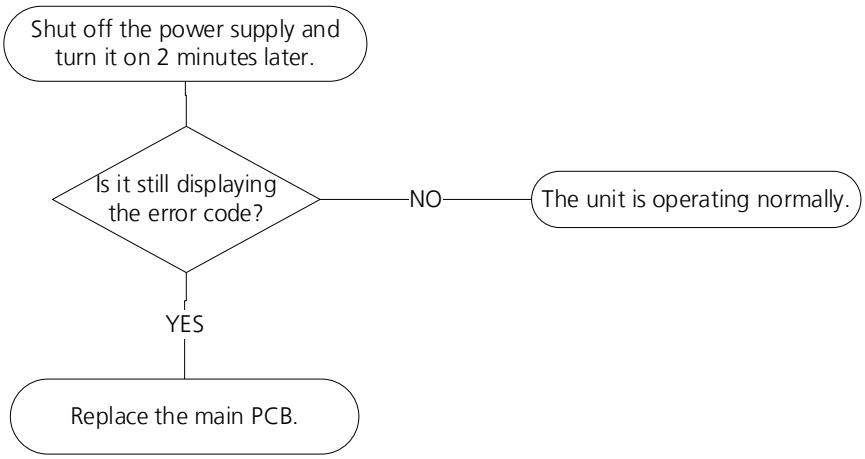
5.2 EC51(Main control board EEPROM malfunction) diagnosis and solution

Description: main chip does not receive feedback from EEPROM chip.

Recommended parts to prepare:

- Main PCB

Troubleshooting and repair:


Shut off the power supply and turn it on 2 minutes later.
Is it still displaying the error code?
NO
The unit is operating normally.
YES
Replace the main PCB.

Remarks:
EEPROM: A read-only memory whose contents can be erased and reprogrammed using a pulsed voltage.

5.3 EH03/EC07(The indoor/outdoor fan speed is operating outside of normal range) diagnosis and solution

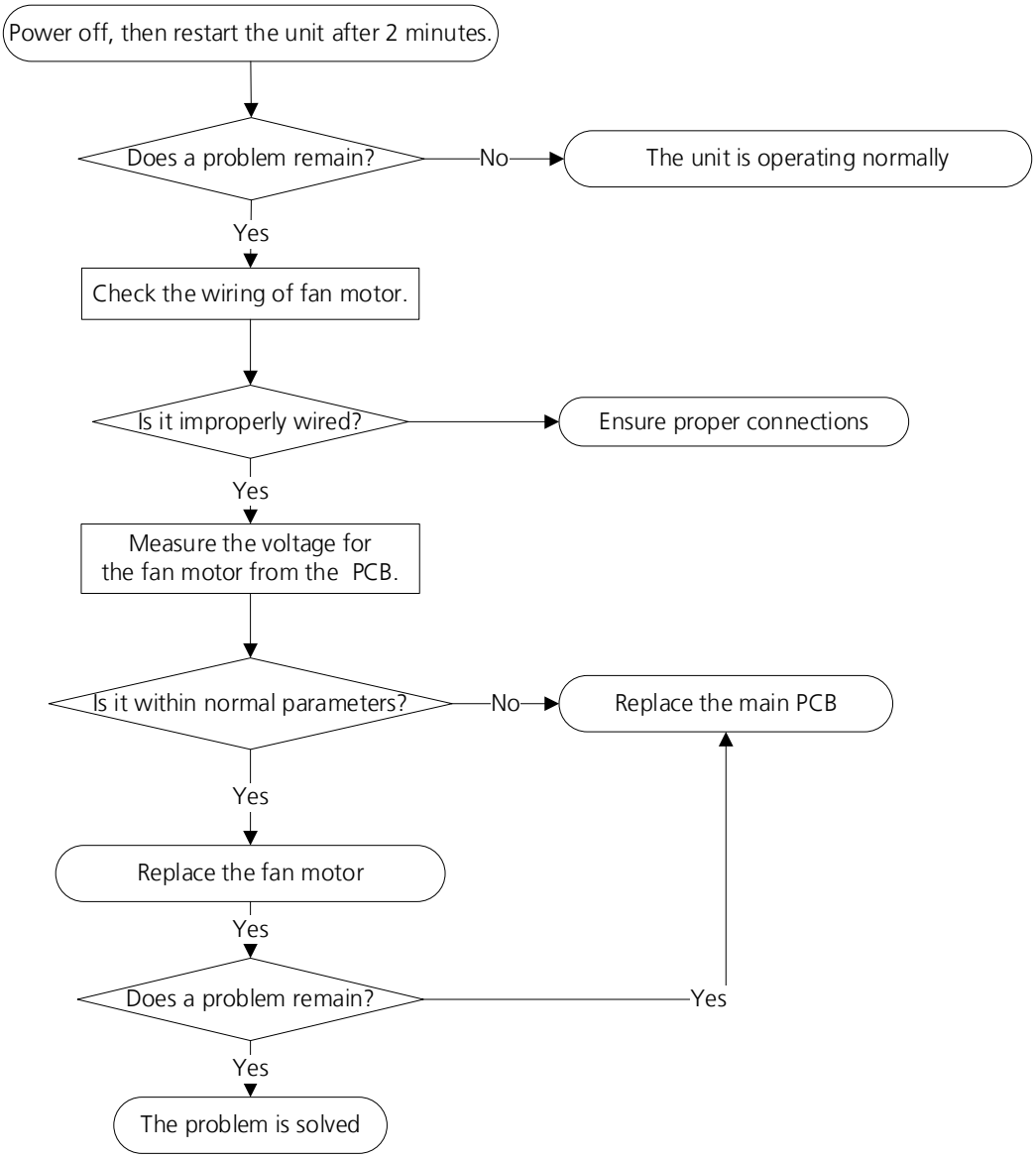
Description: When indoor fan speed keeps too low or too high for a certain time, the LED displays the failure code and the AC turns off.

When outdoor fan has over-current protection, phase lack protection, zero speed protection, IPM protection and so on, the LED displays the failure code and the AC turns off.

Recommended parts to prepare:

- Connection wires
- Fan assembly
- Fan motor
- Main PCB

Troubleshooting and repair:



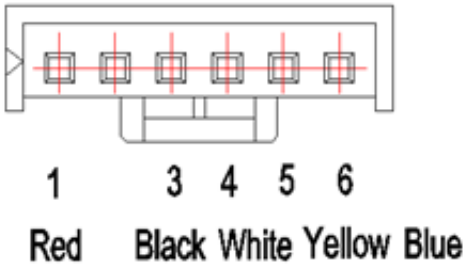
Index:

1. Indoor DC Fan Motor(control chip is in fan motor)

Power on and when the unit is in standby, measure the voltage of pin1-pin3, pin4-pin3 in fan motor connector. If the value of the voltage is not in the range showing in below table, the PCB must has problems and need to be replaced.

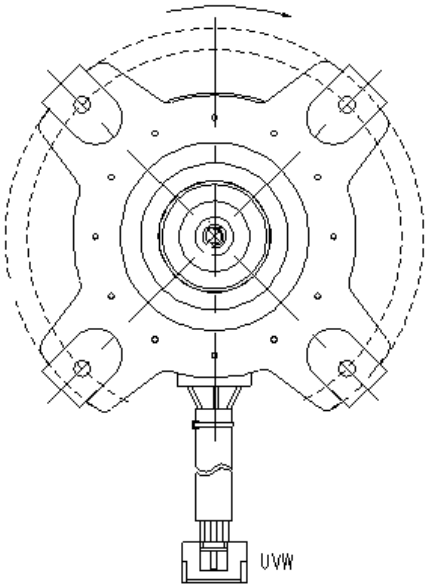
- DC motor voltage input and output:

No.	Color	Signal	Voltage
1	Red	Vs/Vm	50-400V
2	---	---	---
3	Black	GND	0V
4	White	Vcc	13.5-16.5V
5	Yellow	Vsp	0~6.5V
6	Blue	FG	13.5-16.5V



2. Outdoor DC Fan Motor (control chip is in outdoor PCB)

Release the UVW connector. Measure the resistance of U-V, U-W, V-W. If the resistance is not equal to each other, the fan motor must has problems and need to be replaced. otherwise the PCB must has problems and need to be replaced.



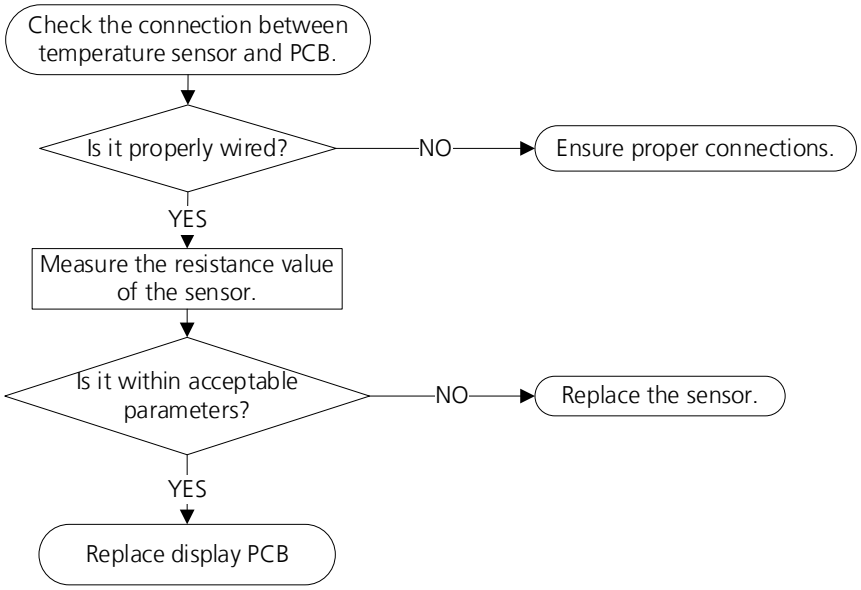
5.4 EH60/EH61(Open circuit or short circuit of indoor temperature sensor(T1, T2)) diagnosis and solution

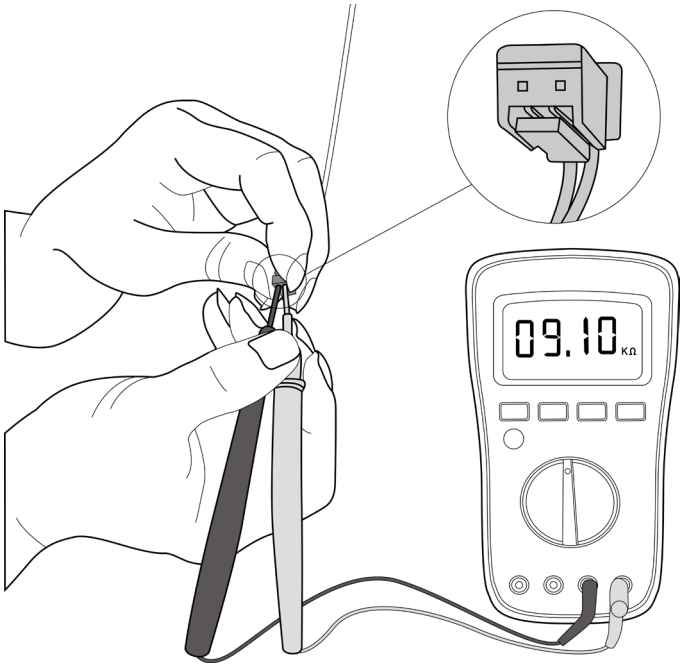
Description: If the sampling voltage is lower than 0.06V or higher than 4.94V, the LED displays the failure code.

Recommended parts to prepare:

- Connection wires
- Sensors
- Display PCB

Troubleshooting and repair:





Note: This picture and the value are only for reference, actual appearance and value may vary.

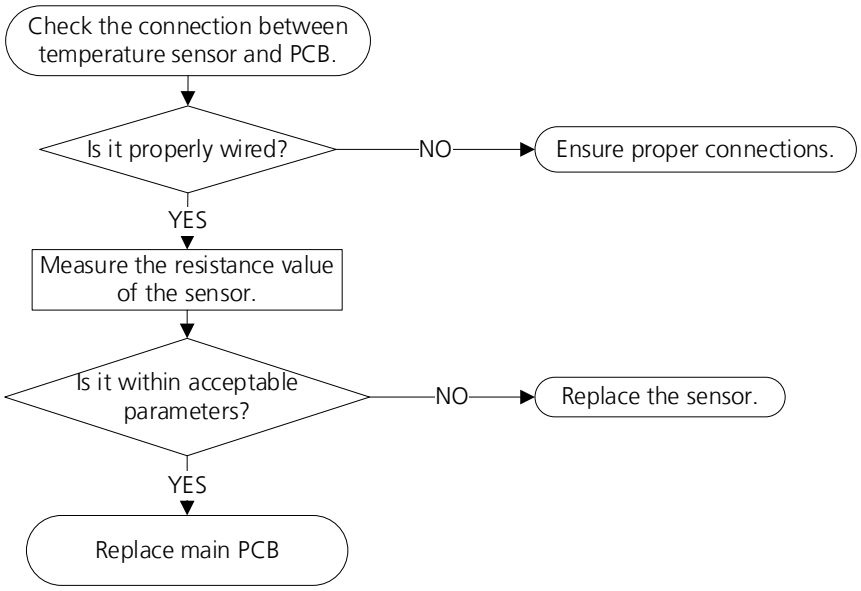
5.5 EC52/EC53/EC54(Open circuit or short circuit of outdoor temperature sensor(T3, T4, TP)) diagnosis and solution

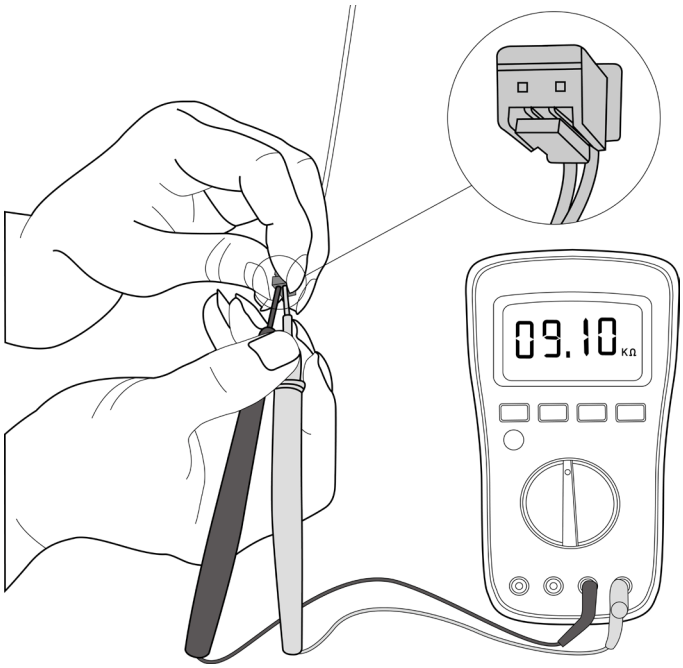
Description: If the sampling voltage is lower than 0.06V or higher than 4.94V, the LED displays the failure code.

Recommended parts to prepare:

- Connection wires
- Sensors
- Main PCB

Troubleshooting and repair:





This picture and the value are only for reference, actual appearance and value may vary.

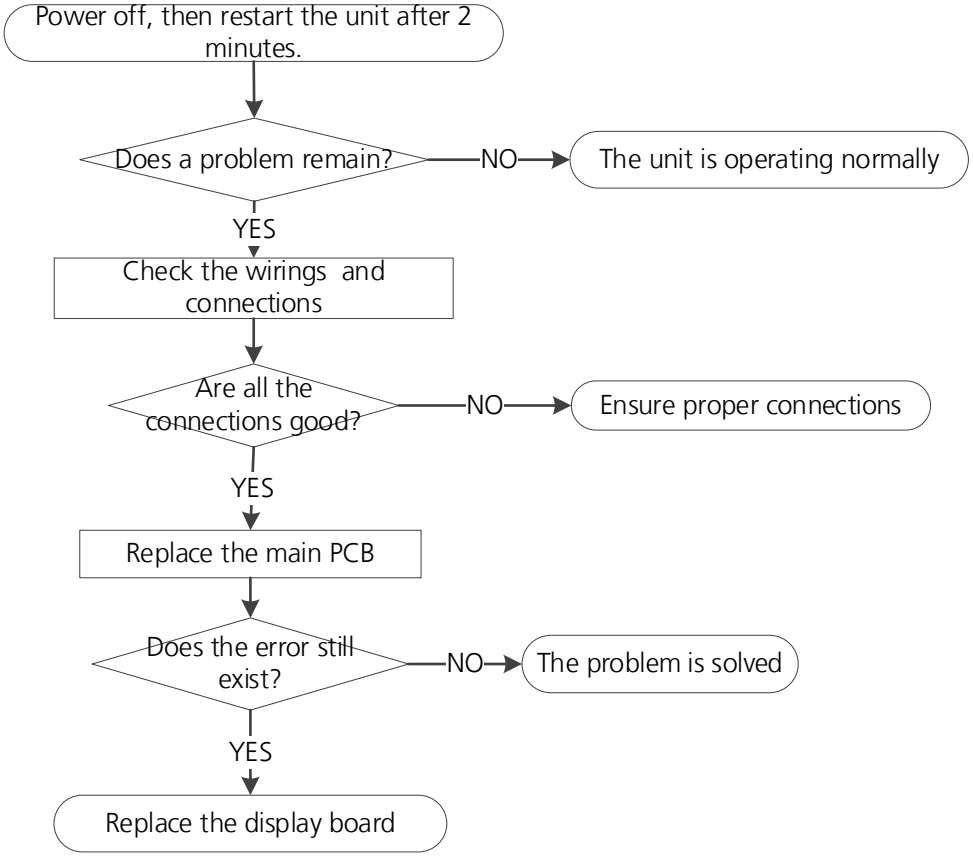
5.6 EH0b(Main PCB/Display board communication error) diagnosis and solution

Description: The main board does not receive feedback from the display board.

Recommended parts to prepare:

- Communication wire
- Main PCB
- Display board

Troubleshooting and repair:



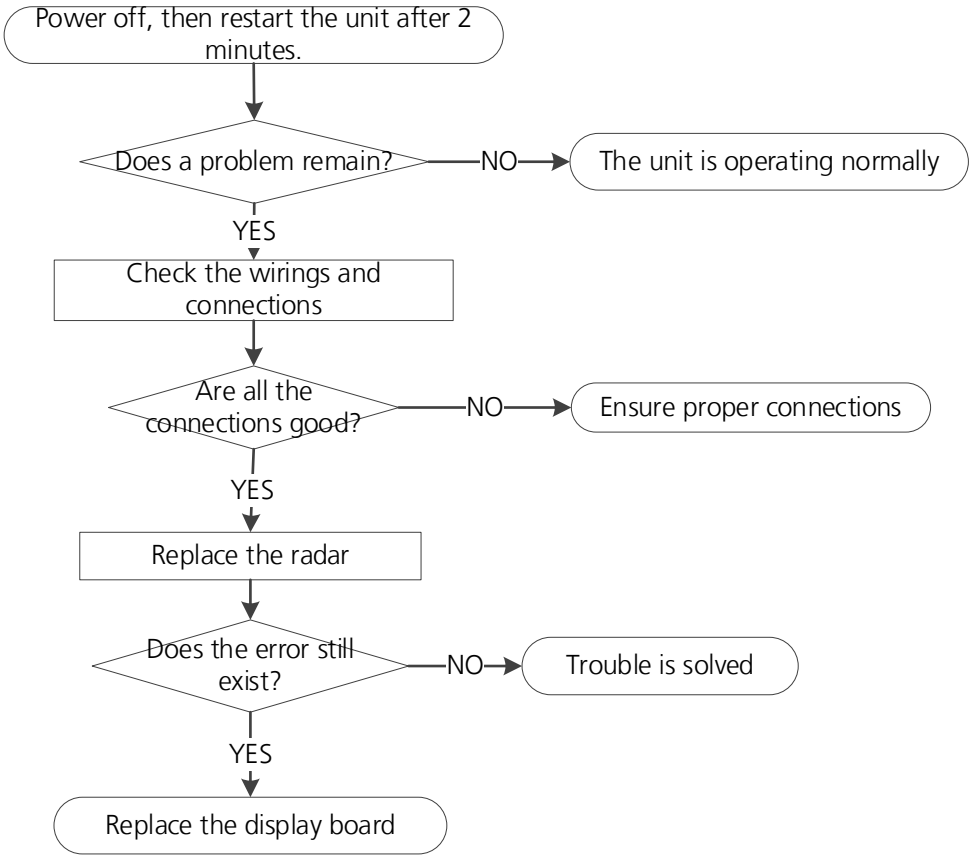
5.7 EHbE(Communication error between radar and display board or radar fault diagnosis and solution

Description: Display PCB does not receive feedback from the radar.

Recommended parts to prepare:

- Communication wire
- Radar
- Display board

Troubleshooting and repair:



5.8 EL0C(System lacks refrigerant) diagnosis and solution

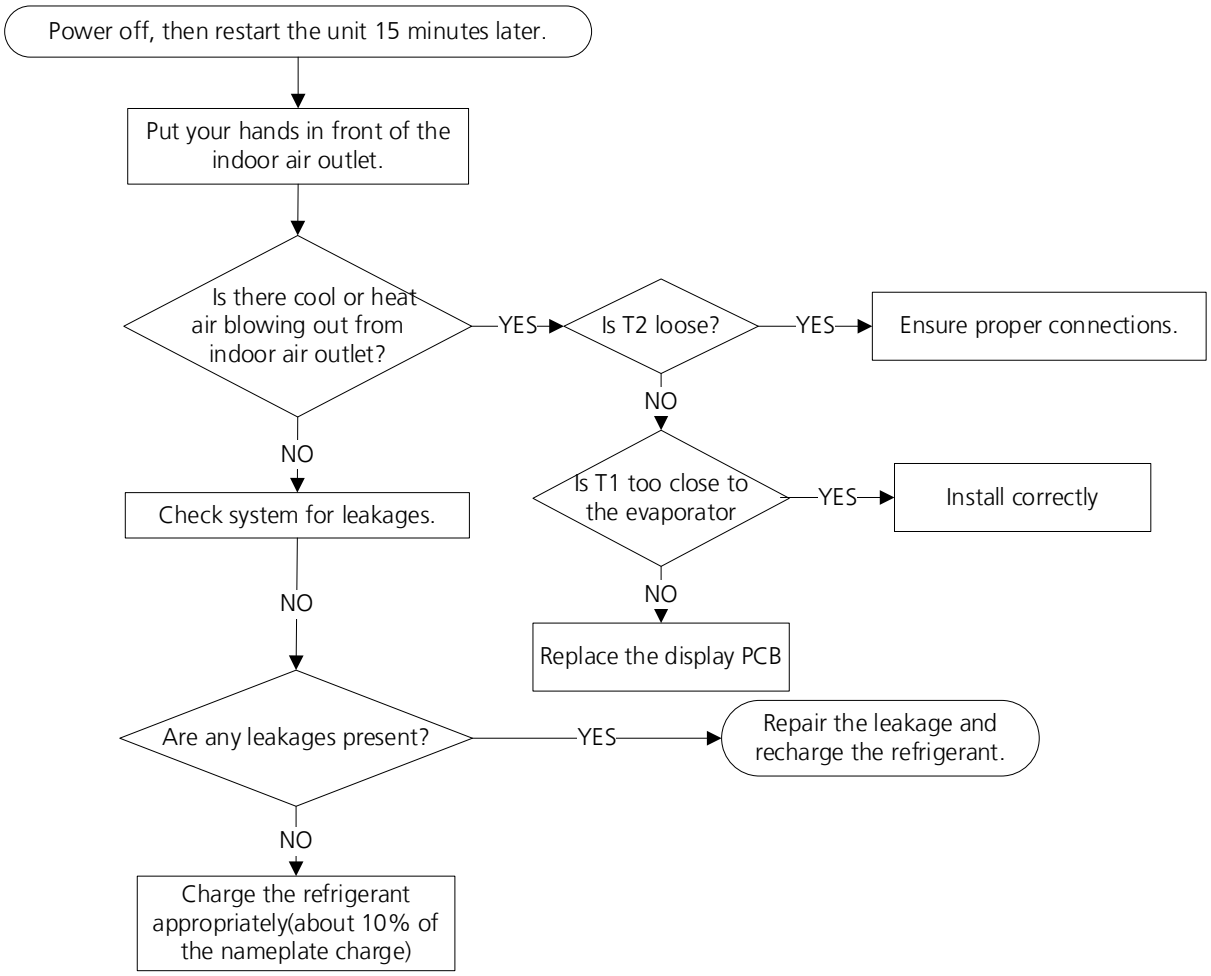
Description:

Judging the abnormality of the refrigeration system according to the number of compressor stops and the changes in operating parameters caused by excessive exhaust temperature.

Recommended parts to prepare:

- Display PCB
- Additional refrigerant

Troubleshooting and repair:


Power off, then restart the unit 15 minutes later.
Put your hands in front of the indoor air outlet.
Is there cool or heat air blowing out from indoor air outlet?
YES
Is T2 loose?
YES
Ensure proper connections.
NO
Is T1 too close to the evaporator
YES
Install correctly
NO
Replace the display PCB
NO
Check system for leakages.
NO
Are any leakages present?
YES
Repair the leakage and recharge the refrigerant.
NO
Charge the refrigerant appropriately(about 10% of the nameplate charge)

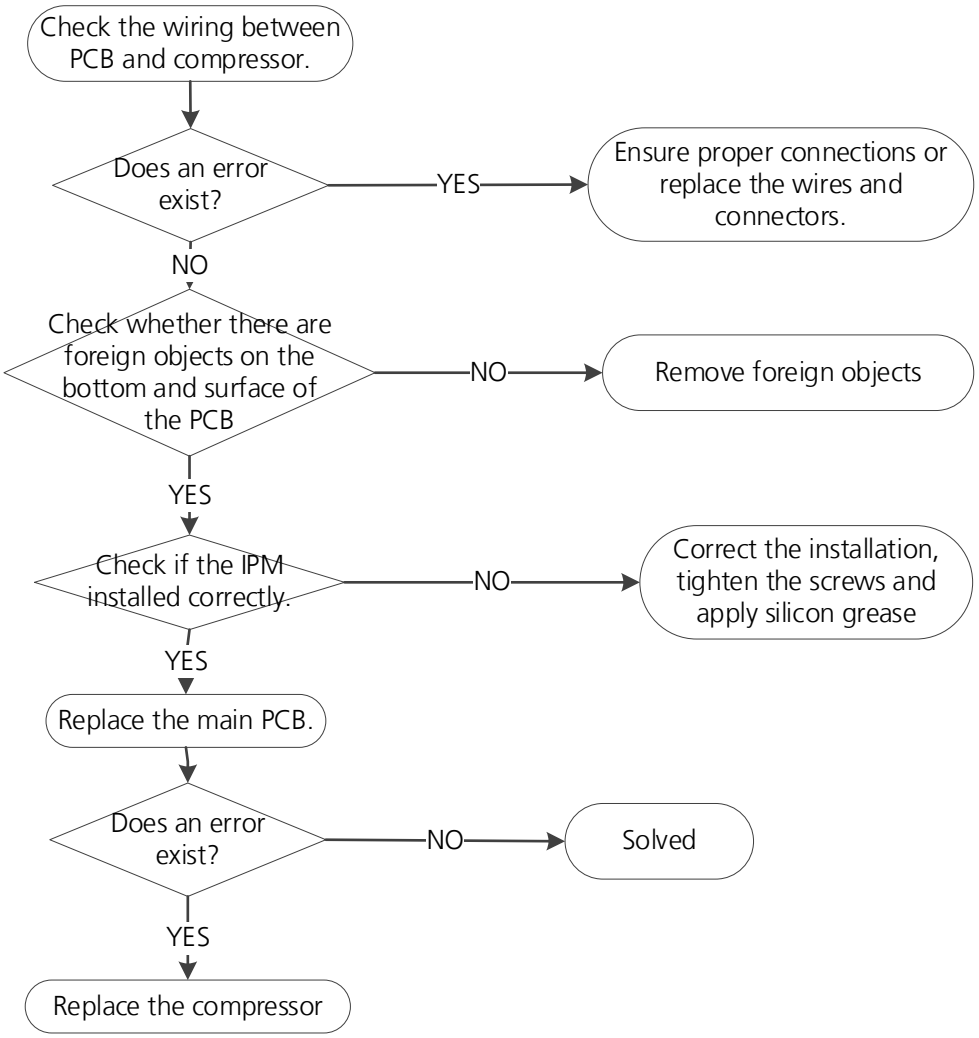
5.9 PC00(IPM malfunction or IGBT over-strong current protection) diagnosis and solution

Description: When the voltage signal the IPM sends to the compressor drive chip is abnormal, , the LED displays the failure code and the AC turn off.

Recommended parts to prepare:

- Main PCB
- Compressor

Troubleshooting and repair:



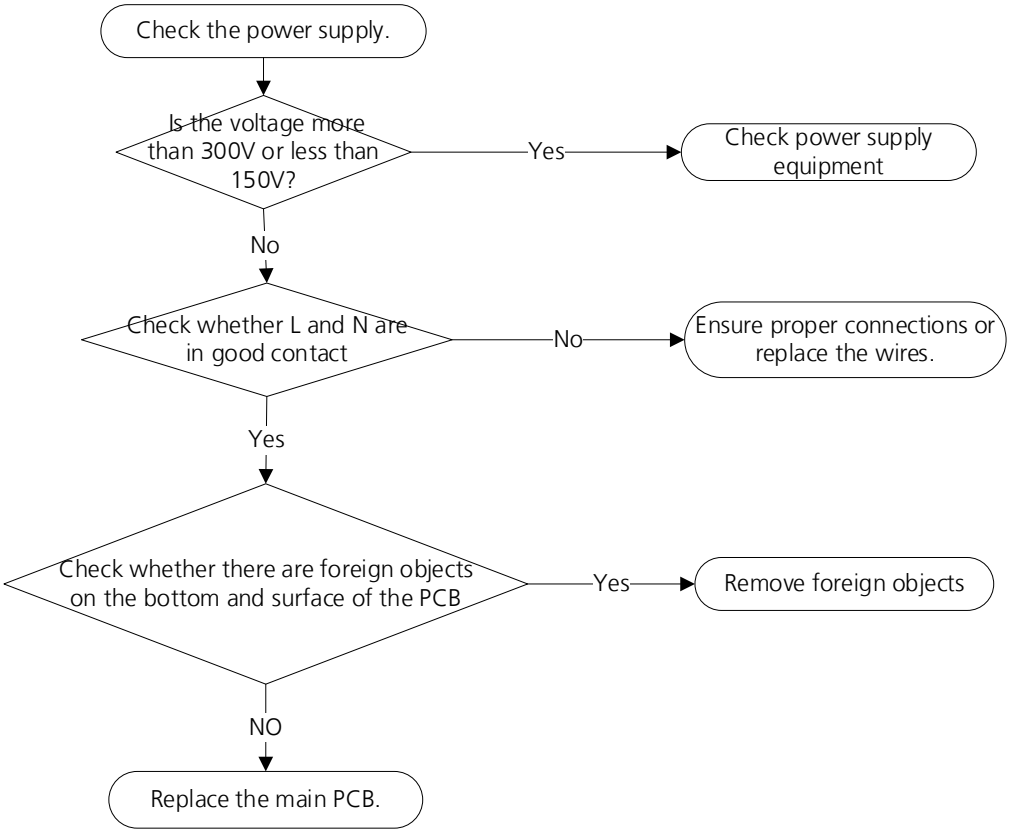
5.10 PC01(Over voltage or too low voltage protection) diagnosis and solution

Description: Abnormal increases or decreases in voltage are detected by checking the specified voltage detection circuit.

Recommended parts to prepare:

- Power supply wires
- Main PCB

Troubleshooting and repair:


Check the power supply.
Is the voltage more than 300V or less than 150V?
Yes
Check power supply equipment
No
Check whether L and N are in good contact
No
Ensure proper connections or replace the wires.
Yes
Check whether there are foreign objects on the bottom and surface of the PCB
Yes
Remove foreign objects
NO
Replace the main PCB.

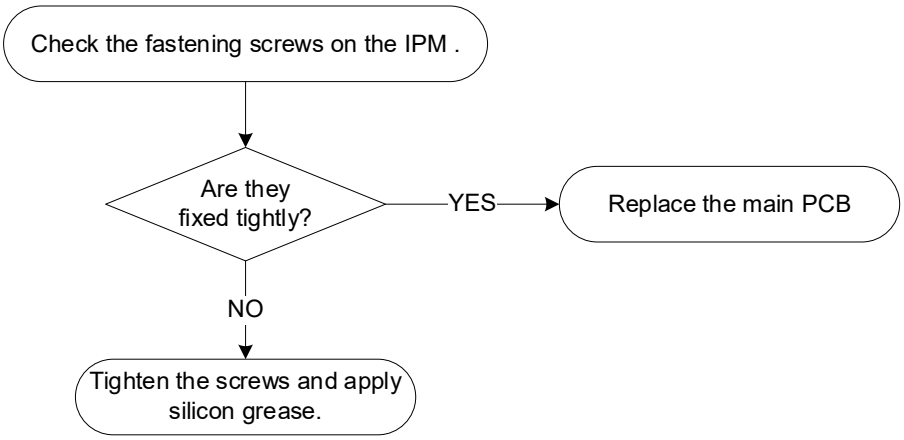
5.11 PC02(High temperature protection of IPM module) diagnosis and solution

Description: If the temperature of IPM module is higher than a certain value, the LED displays the failure code.

Recommended parts to prepare:

- Main PCB

Troubleshooting and repair:


Check the fastening screws on the IPM .
Are they fixed tightly?
YES
Replace the main PCB
NO
Tighten the screws and apply silicon grease.

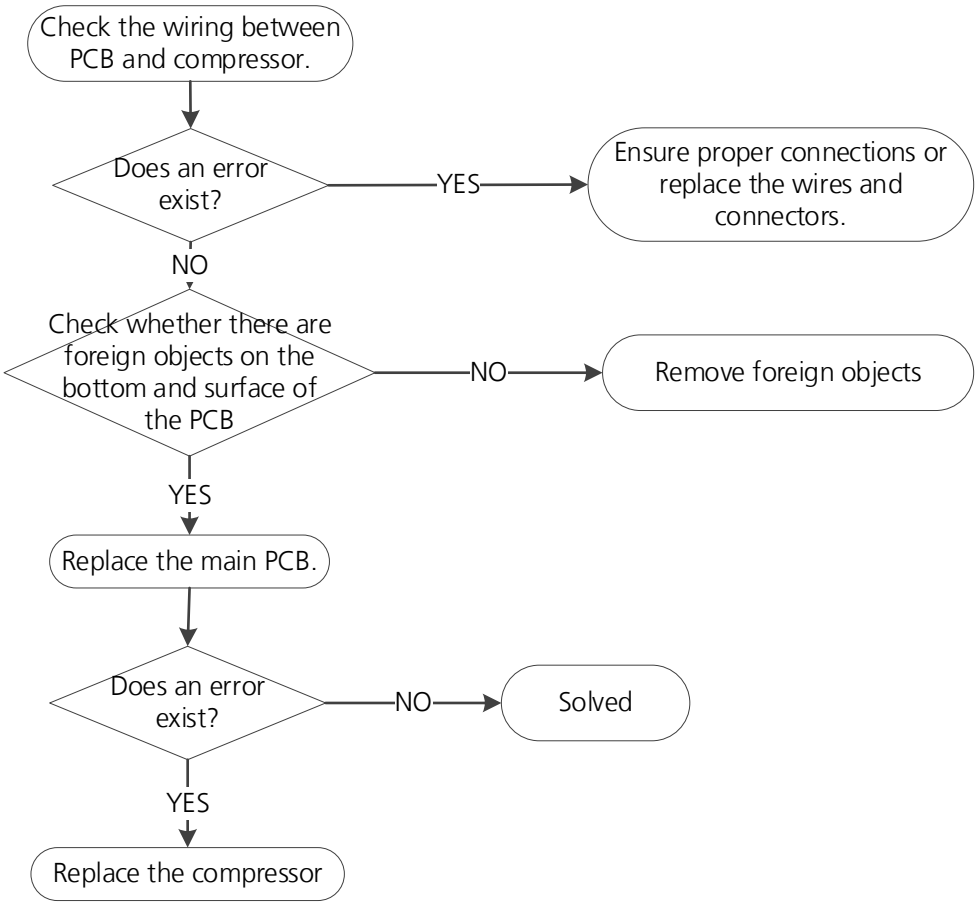
5.12 PC04(Inverter compressor drive error) diagnosis and solution

Description: An abnormal inverter compressor drive is detected by a special detection circuit, including communication signal detection, voltage detection, compressor rotation speed signal detection and so on.

Recommended parts to prepare:

- Compressor
- Main PCB

Troubleshooting and repair:



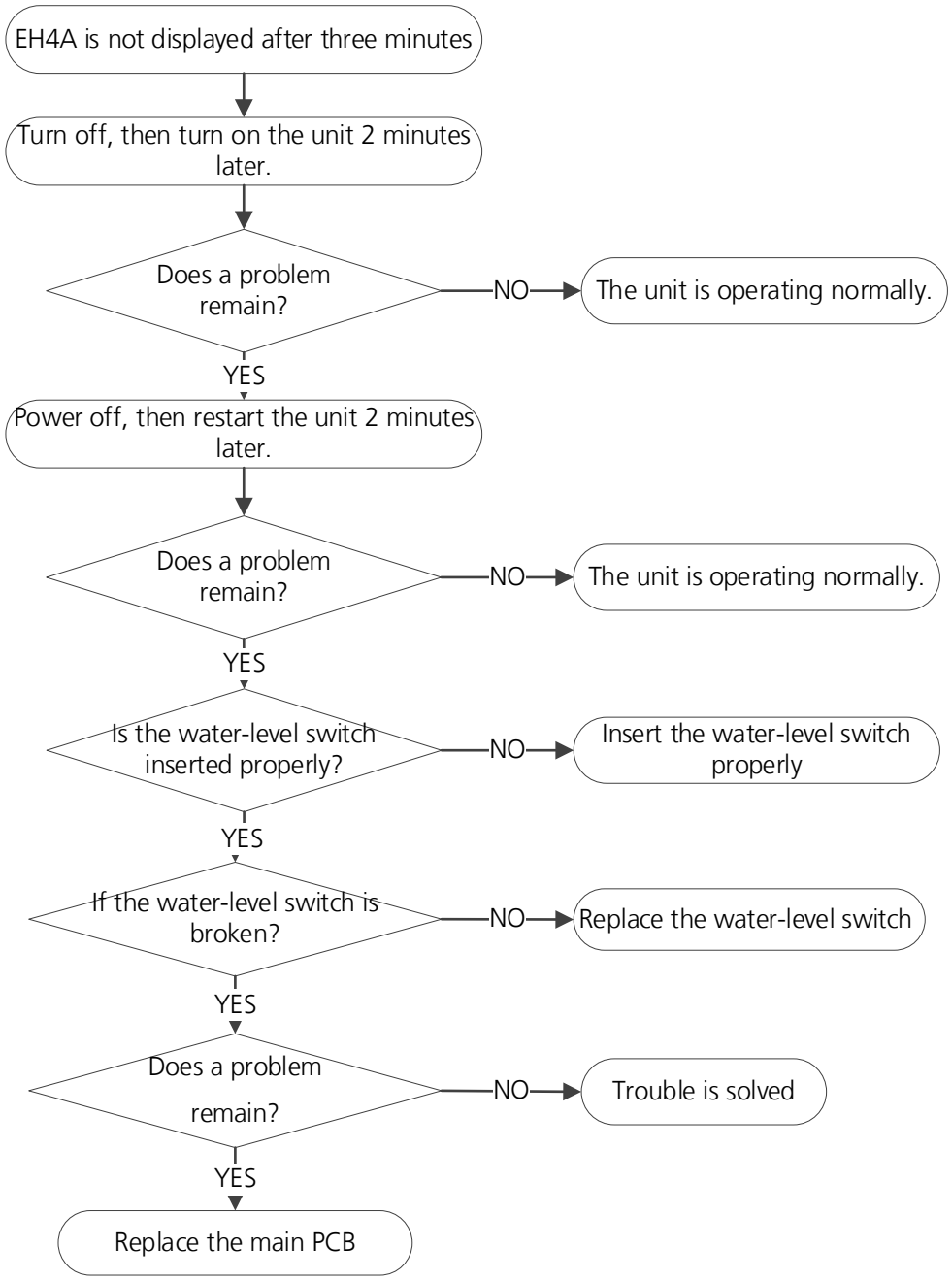
5.13 P1(Water full protection) diagnosis and solution

Description: If the water level rises to the upper water level switch, the compressor ceases operation, the LED displays "P1".

Recommended parts to prepare:

- Water-level switch
- Main PCB

Troubleshooting and repair:



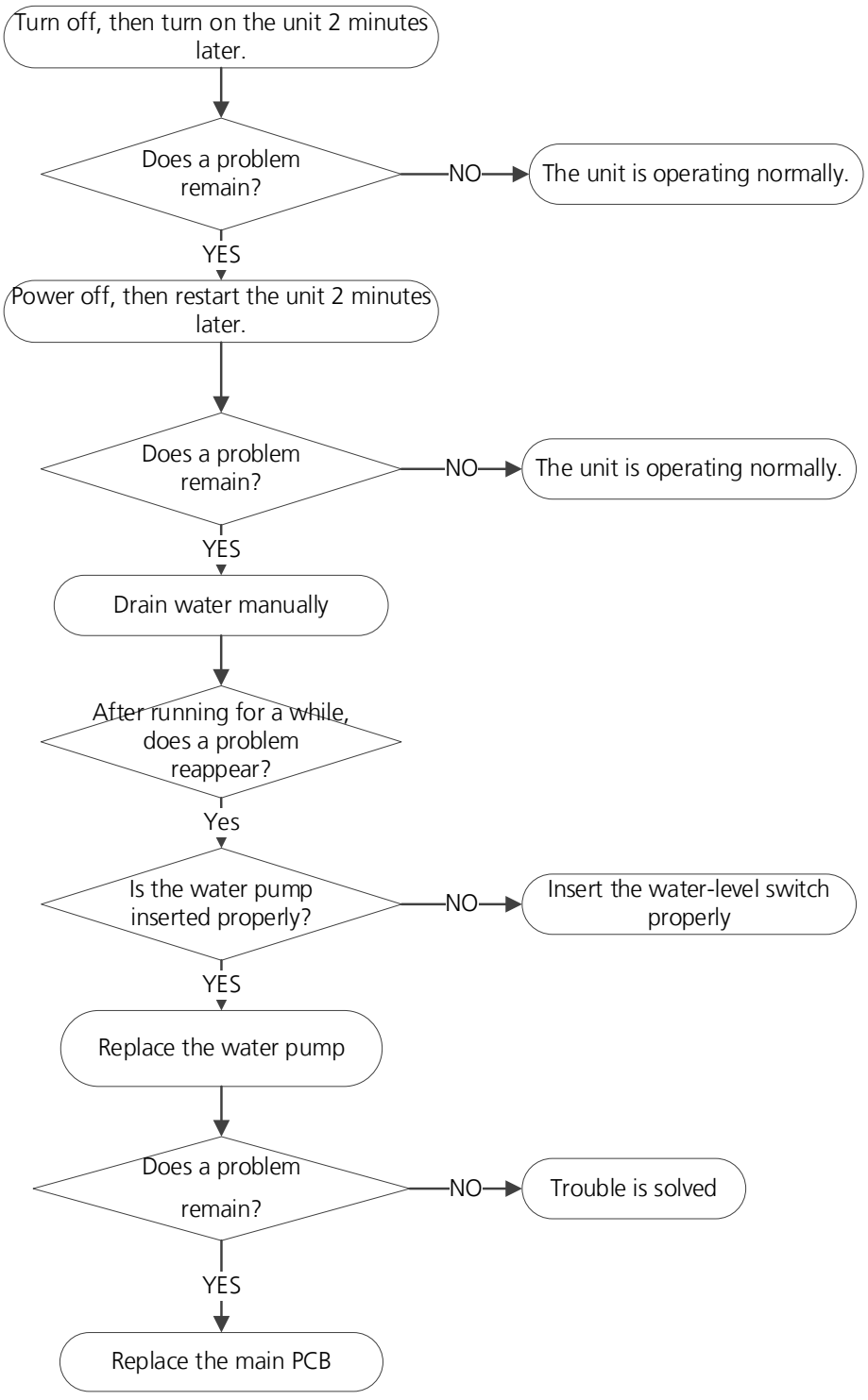
5.14 EH4A(Pump malfunction and water full protection) diagnosis and solution

Description: If the water level rises to the upper water level switch more than 3 minutes, it means the water pump is faulty, the LED displays the failure code.

Recommended parts to prepare:

- Water pump
- Main PCB

Troubleshooting and repair:



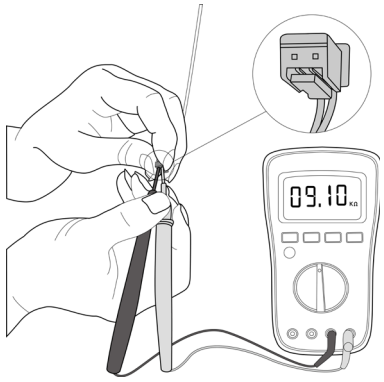
6. Check Procedures

6.1 Temperature Sensor Check

WARNING

Be sure to turn off all power supplies or disconnect all wires to avoid electric shock. Operate after compressor and coil have returned to normal temperature in case of injury.

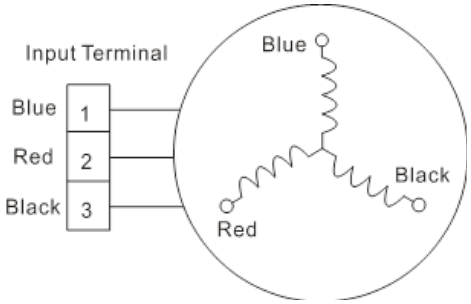
1. Disconnect the temperature sensor from PCB (Refer to Chapter 5&6. Indoor&Outdoor Unit Disassembly).
2. Measure the resistance value of the sensor using a multi-meter.
3. Check corresponding temperature sensor resistance value table (Refer to Chapter Appendix).



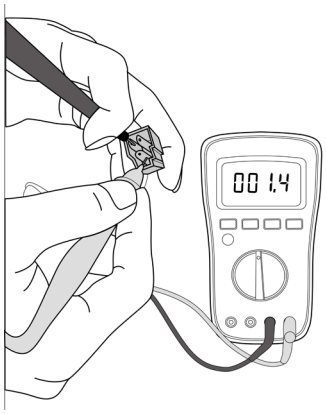
Note: The picture and the value are only for reference, actual condition and specific value may vary.

6.2 Compressor Check

1. Disconnect the compressor power cord from outdoor PCB (Refer to Chapter 6. Outdoor Unit Disassembly)).
2. Measure the resistance value of each winding using a multi-meter.
3. Check the resistance value of each winding in the following table.



Resistance Value	GSD098XKUF7JV6B
Blue-Red	2.83Ω
Blue-Black	
Red-Black	



Note: The picture and the value are only for reference, actual condition and specific value may vary.

6.3 IPM Continuity Check

WARNING

Electricity remains in capacitors even when the power supply is off.
Ensure the capacitors are fully discharged before troubleshooting.

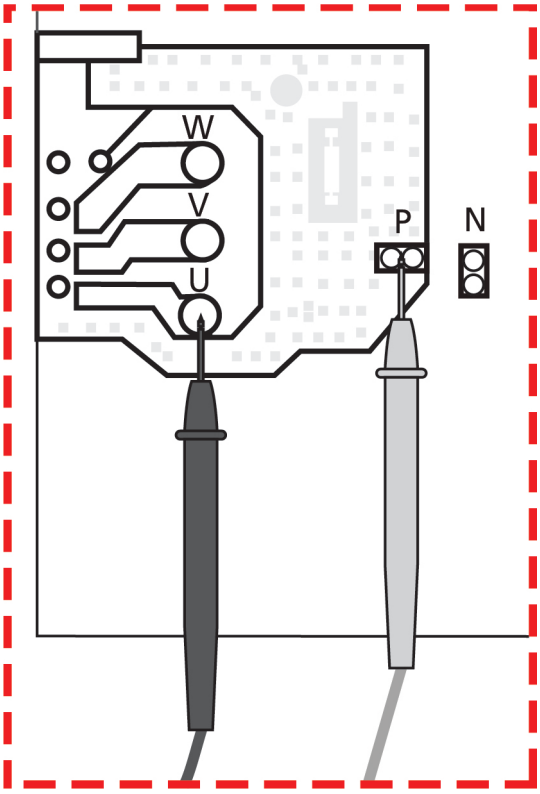
1. Turn off outdoor unit and disconnect power supply.
2. Discharge electrolytic capacitors and ensure all energy-storage unit has been discharged.
3. Disassemble outdoor PCB or disassemble IPM board.
4. Measure the resistance value between P and U(V, W, N); U(V, W) and N.

Digital tester		Resistance value	Digital tester		Resistance value
(+)Red	(-)Black		(+)Red	(-)Black	
P	N	∞ (Several MΩ)	U	N	∞ (Several MΩ)
	U		V		
	V		W		
	W		-		

Or test the conductivity of IPM with diode mode.

Needle-type Tester		Normal Value	Needle-type Tester		Normal Value
Red	Black		Red	Black	
P	U	Open-circuit	N	U	0.3-0.5V
	V			V	
	W			W	

Needle-type Tester		Normal Value	Needle-type Tester		Normal Value
Black	Red		Black	Red	
P	U	0.3-0.5V	N	U	Open-circuit
	V			V	
	W			W	

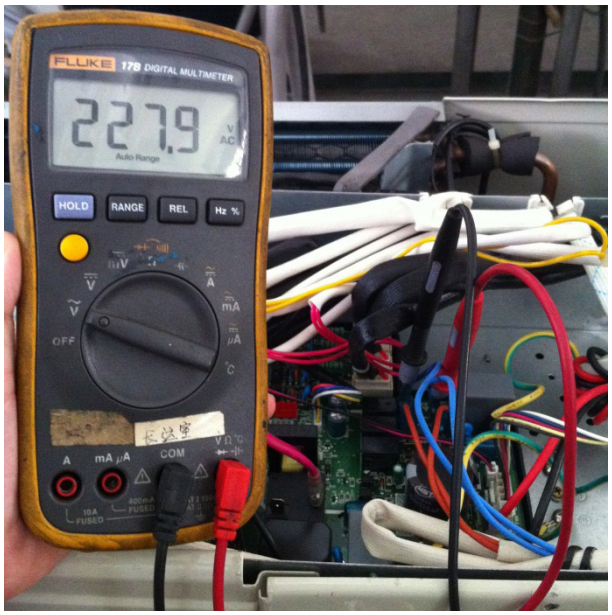


Note: The picture and the value are only for reference, actual condition and specific value may vary.

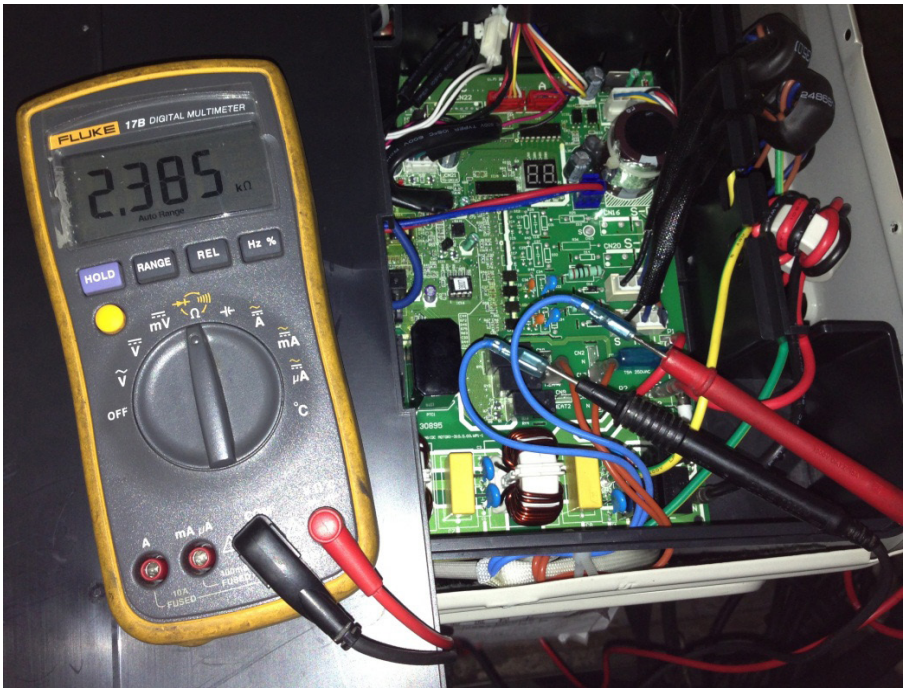
6.4 4-way Valve Check

1. Power on, use a digital tester to measure the voltage, when the unit operates in cooling, it is 0V. When the unit operates in heating, it is about 230VAC.

If the value of the voltage is not in the range, the PCB must have problems and need to be replaced.



2 Turn off the power, use a digital tester to measure the resistance. The value should be 1.8~2.5 KΩ.

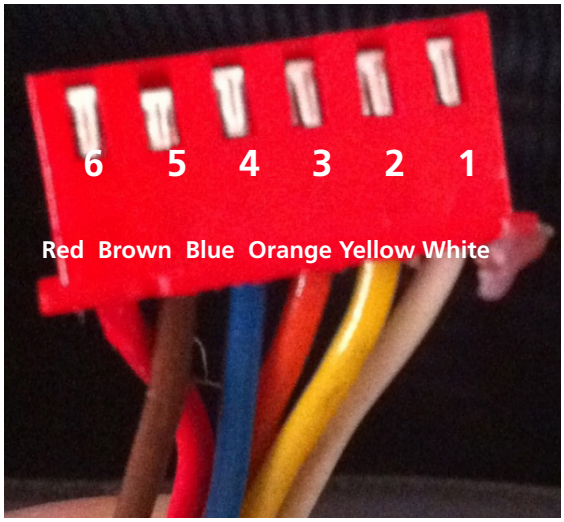


6.5 EXV Check

WARNING

Electricity remains in capacitors even when the power supply is off.
Ensure the capacitors are fully discharged before troubleshooting.

1. Disconnect the connector from outdoor PCB.
2. Measure the resistance value of each winding using a multi-meter.
3. Check the resistance value of each winding in the following table.



Color of lead winding	Normal Value
Red- Blue	About 50Ω
Red - Yellow	
Brown-Orange	
Brown-White	

Unit Disassembly

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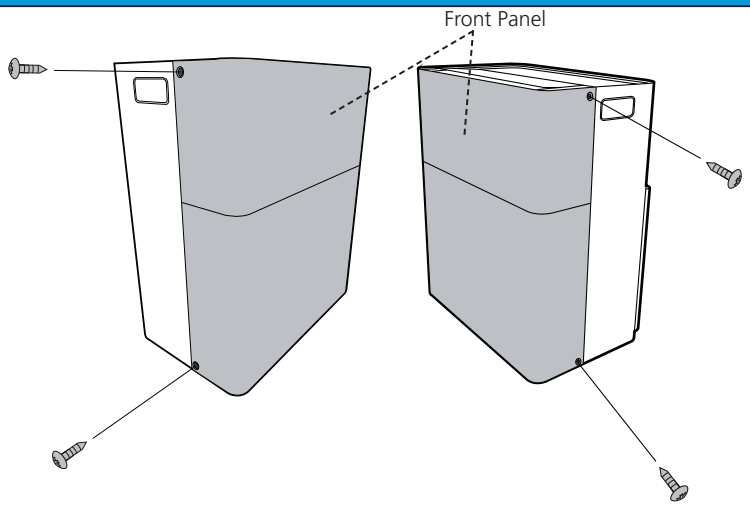
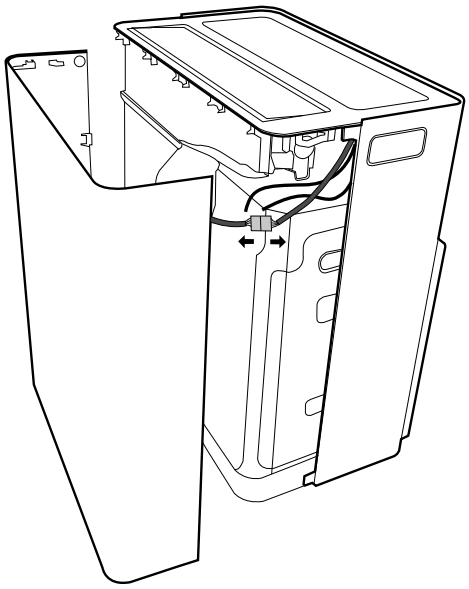
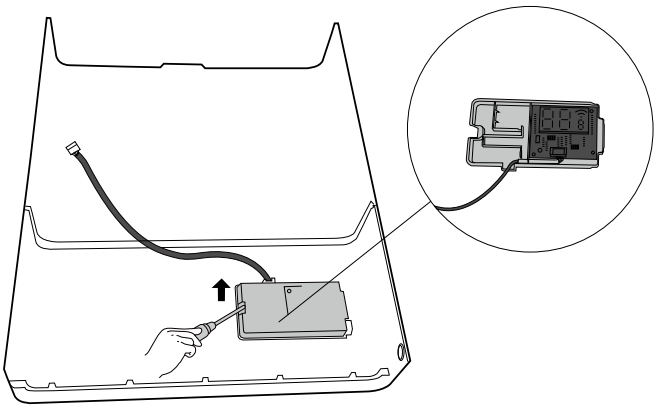
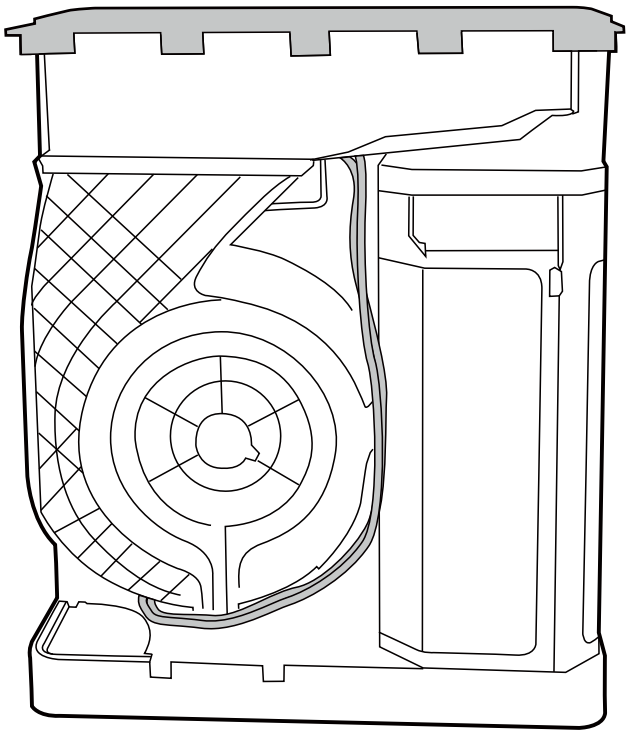
1. Indoor Unit Disassembly

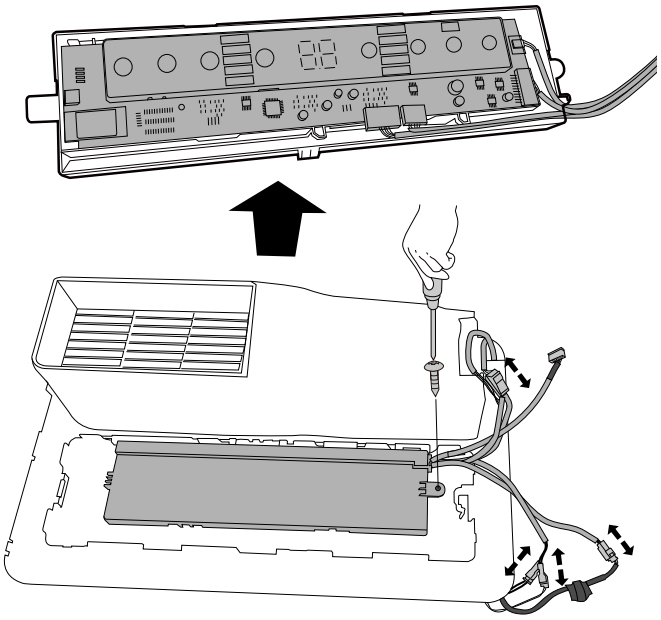
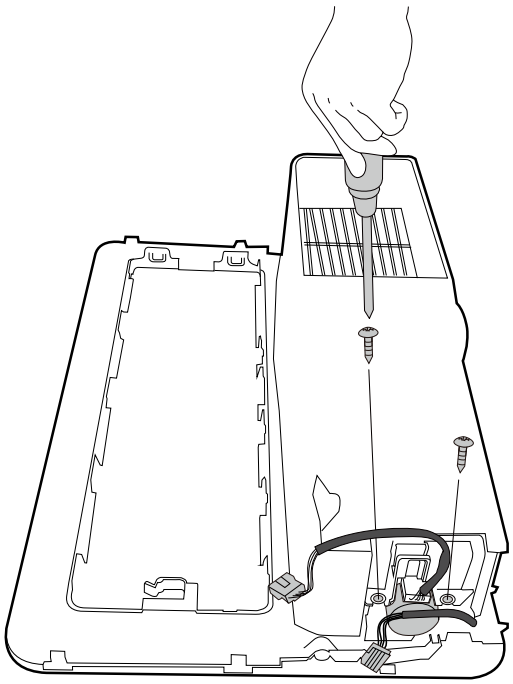
1.1 Display Board and Stepping Motor

Procedure	Illustration
1) Remove 4 screws(2 screws on each side). (see CJ_CS_IDU_001). 2) Disconnect connector between display board and main board, then remove the front panel. (see CJ_CS_IDU_002).	 **CJ_CS_IDU_001**  **CJ_CS_IDU_002**

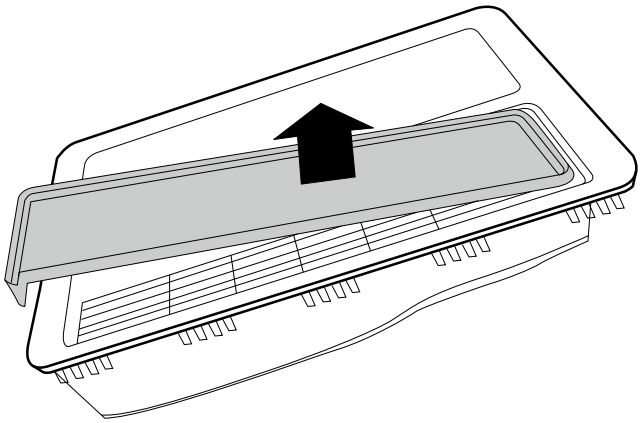
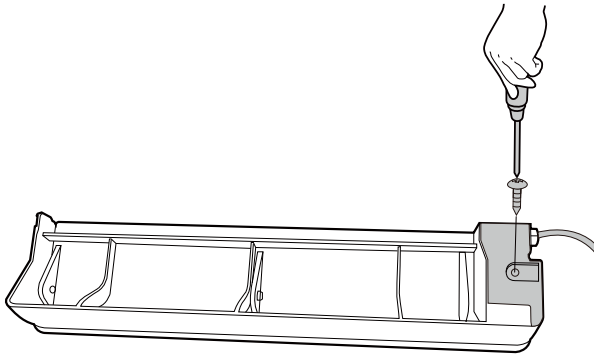
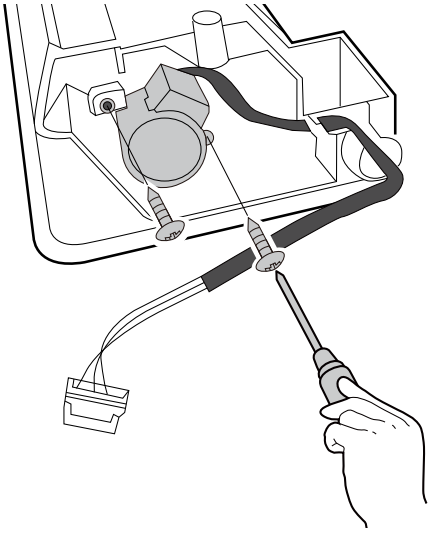
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
3) Forcefully remove the sub display board subassembly. (see CJ_CS_IDU_003). 4) Rotate the display board in the direction shown in the right picture. (see CJ_CS_IDU_003). 5) Remove the sub display board.	
	CJ_CS_IDU_003
6) Remove the top cover assembly and parts upward. (see CJ_CS_IDU_004)	
	CJ_CS_IDU_004

Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
7) Remove 1 screw.(see CJ_CS_IDU_005) 8) Disconnect the connectors for T1, T2 and swing motors. (see CJ_CS_IDU_005) 9) Rotate the display board in the direction shown in the right picture. (see CJ_CS_IDU_005) 10)Remove the display board.	 **CJ_CS_IDU_005**
11)Remove 2 screws and then remove the stepping motor(with gear). (see CJ_CS_IDU_006).	 **CJ_CS_IDU_006**

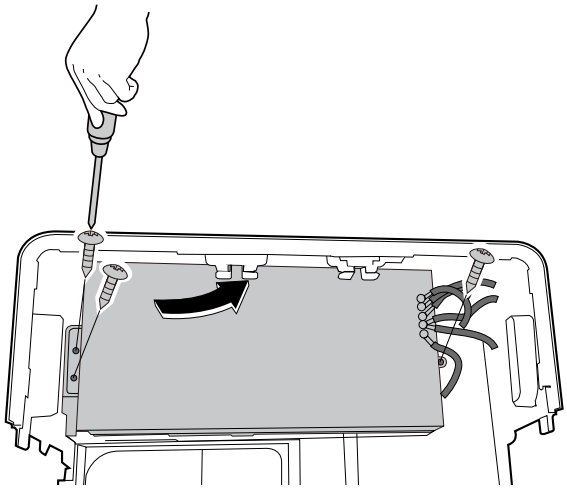
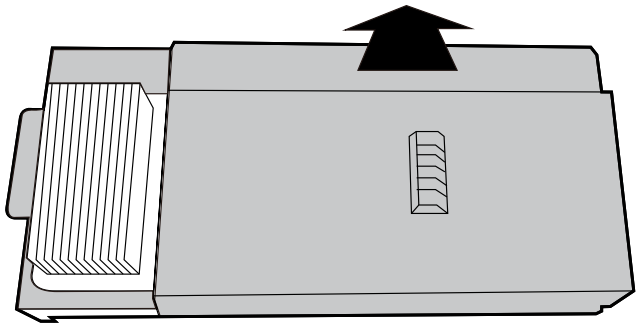
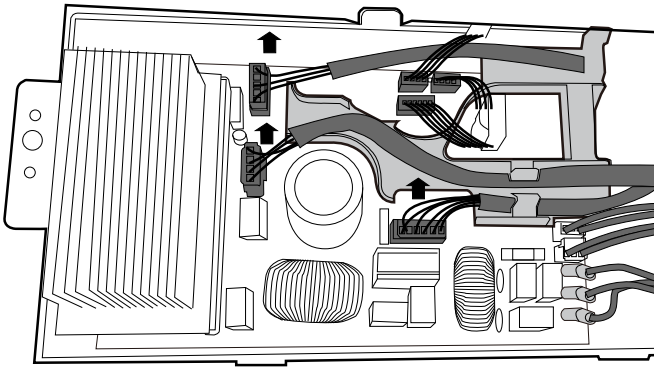
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
12)Remove the air guide plate. (see CJ_CS_IDU_007)	 CJ_CS_IDU_007
13)Remove 1 screw and then remove the stepping motor cover. (see CJ_CS_IDU_008).	 CJ_CS_IDU_008
14)Remove 2 screws and then remove the stepping motor 2. (see CJ_CS_IDU_009).	 CJ_CS_IDU_009

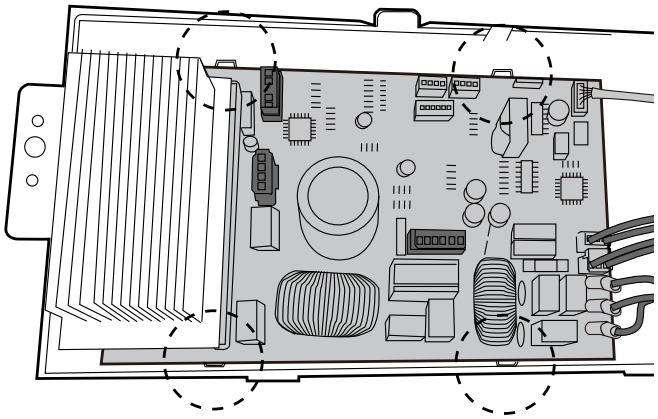
Note: This section is for reference only. Actual unit appearance may vary.

1.2 Electrical parts (Antistatic gloves must be worn.)

Note: Remove the the top cover assembly and parts (refer to 1.1. Display Board and Stepping Motor) before disassembling electrical parts.

Procedure	Illustration
1) Remove 3 fixing screws and then rotate the electrical control box subassembly in the direction shown in the right picture. (see CJ_CS_IDU_010) (If you want to repair the electrical control box components, perform the first step;If you want to repair the main control board assembly, perform steps 2 to 5 below.)	 **CJ_CS_IDU_010**
2) Remove the cover of electronic control box. (see CJ_CS_IDU_011).	 **CJ_CS_IDU_011**
3) Disconnect 3 connectors. (see CJ_CS_IDU_012) 4) Remove the bracket. (see CJ_CS_IDU_012)	 **CJ_CS_IDU_012**

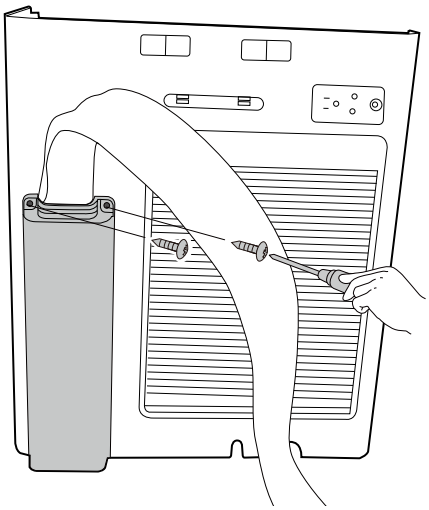
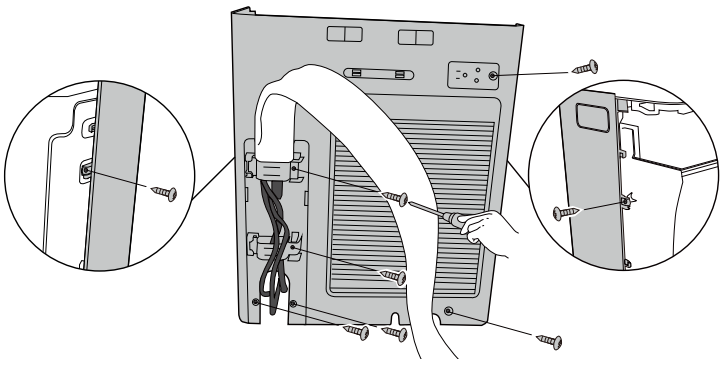
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
5) Disconnect the connectors and remove main control board. (see CJ_CS_IDU_013).	 CJ_CS_IDU_013

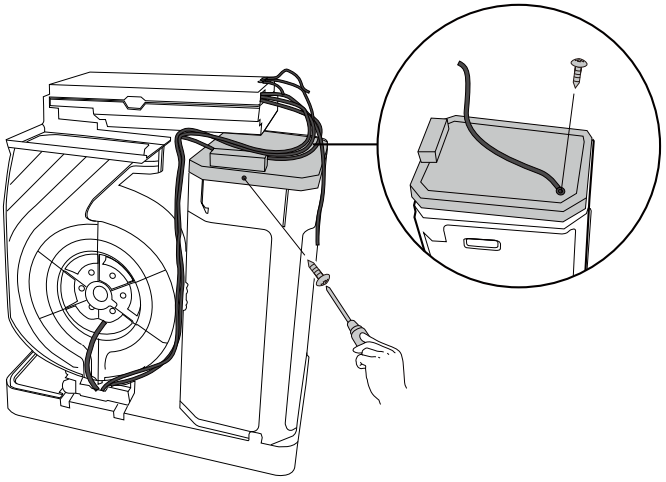
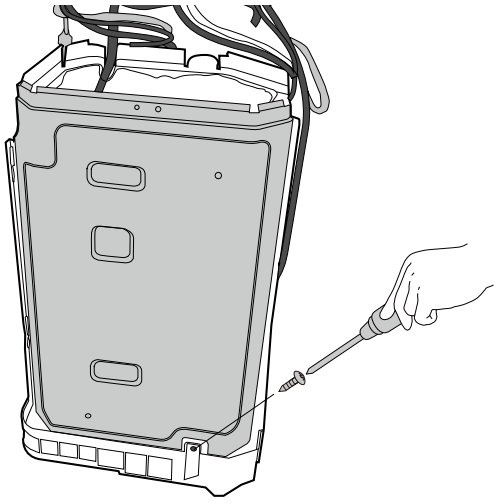
Note: This section is for reference only. Actual unit appearance may vary.

1.3 Fan motor and fan

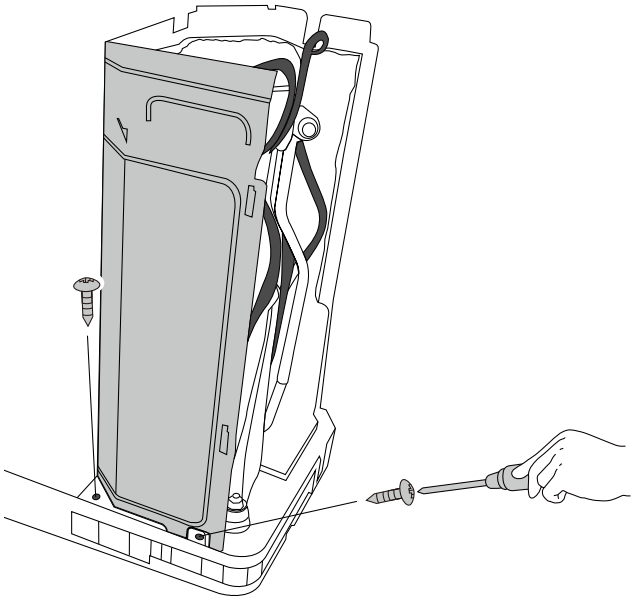
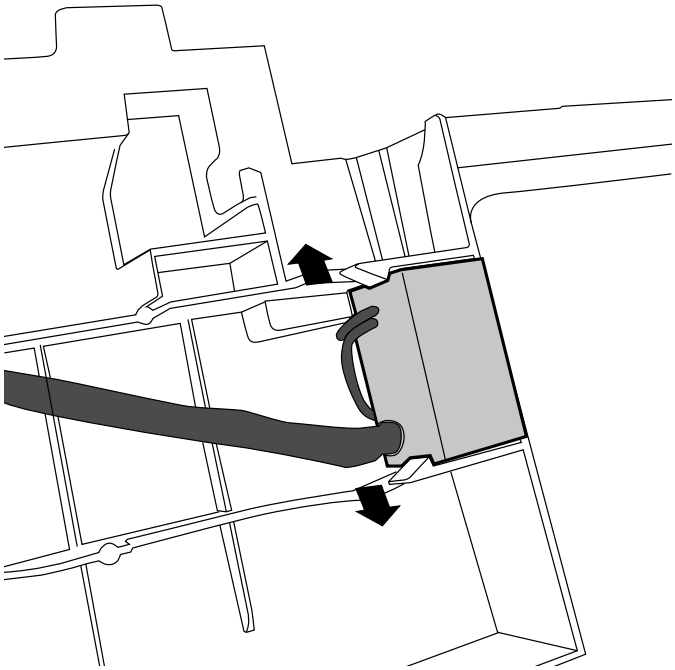
Note: Remove the front panel (refer to 1.1 Display Board and Stepping Motor). before disassembling fan motor and fan.

Procedure	Illustration
1) Remove 2 screws and then remove the piping cover. (see CJ_CS_IDU_014)	 **CJ_CS_IDU_014**
2) Remove 8 screws and then remove the rear panel assembly (see CJ_CS_IDU_023).	 **CJ_CS_IDU_015**

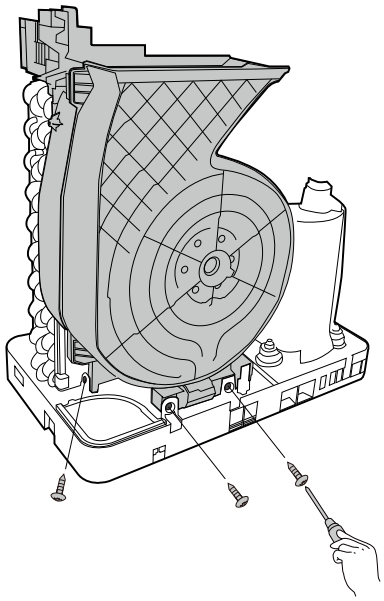
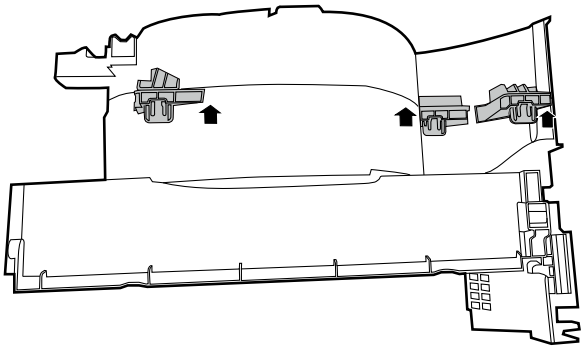
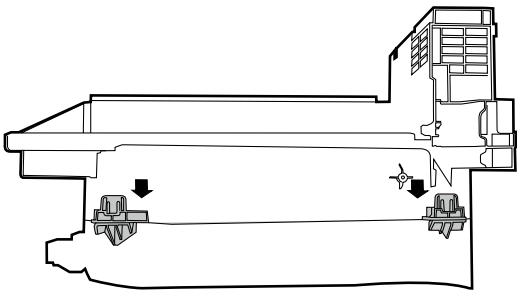
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
3) Remove the fixing screw. (see CJ_CS_IDU_016) 4) Remove the grounding screw. (see CJ_CS_IDU_016) 5) Remove the sound insulation. 6) Remove 1 screw and then remove the right sound insulation cover.(see CJ_CS_IDU_017)	 **CJ_CS_IDU_016**  **CJ_CS_IDU_017**

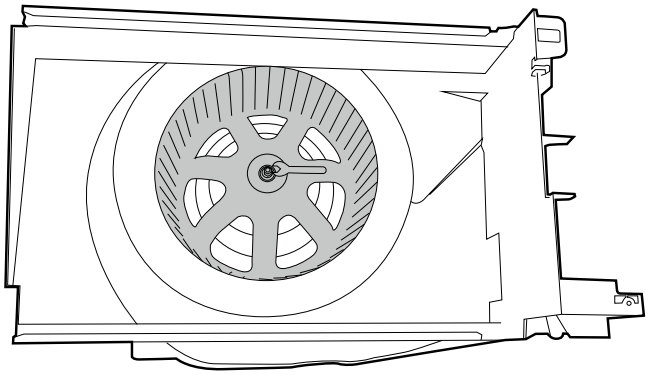
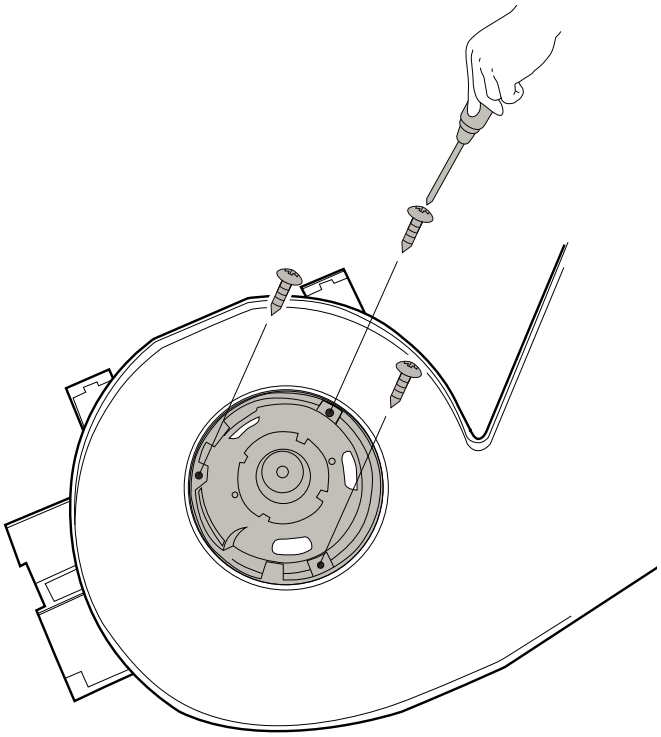
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
7) Remove 2 screws and then remove the left sound insulation cover.(see CJ_CS_IDU_018)	 CJ_CS_IDU_018
8) Remove anion generator.(see CJ_CS_IDU_019)(for some units)	 CJ_CS_IDU_019

Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
9) Remove 3 screws and then remove the inner air passage assembly.(see CJ_CS_IDU_020)	 CJ_CS_IDU_020
10)Release the five clasps, and then remove the air passage stand(Three and two on the opposite side).(see CJ_CS_IDU_021)	  CJ_CS_IDU_021

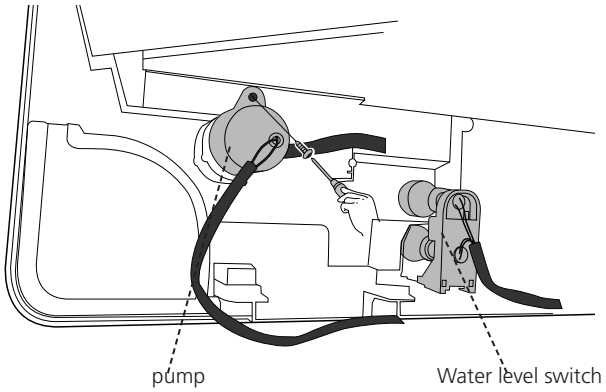
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
11)Remove the nut securing the fan with a spanner.(see CJ_CS_IDU_022) 12)Remove the centrifugal fan.	 **CJ_CS_IDU_022**
13)Remove 3 screws and then remove the motor bearing cover.(see CJ_CS_IDU_023) 14)Remove the motor.	 **CJ_CS_IDU_023**

Note: This section is for reference only. Actual unit appearance may vary.

1.4 Pump

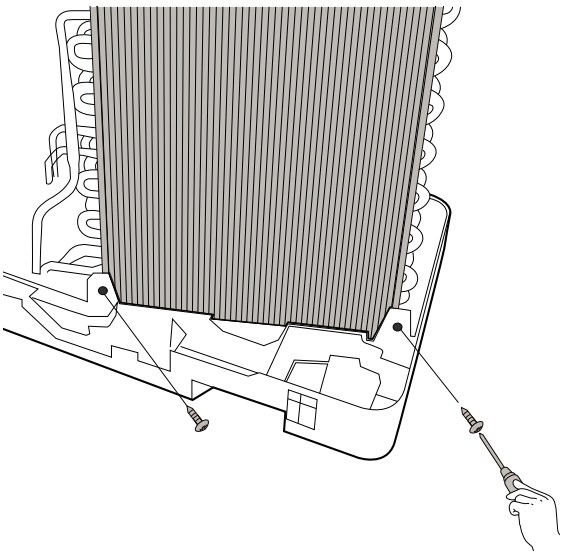
Note: Remove the front panel and fan motor (refer to 1.1 Display Board and Stepping Motor and 1.3. Fan motor) before disassembling pump

Procedure	Illustration
1) Remove the screw, then remove the pump(see CJ_CS_IDU_024). 2) Remove water level switch (see CJ_CS_IDU_024).	 CJ_CS_IDU_024

Note: This section is for reference only. Actual unit appearance may vary.

1.5 Evaporator Assembly

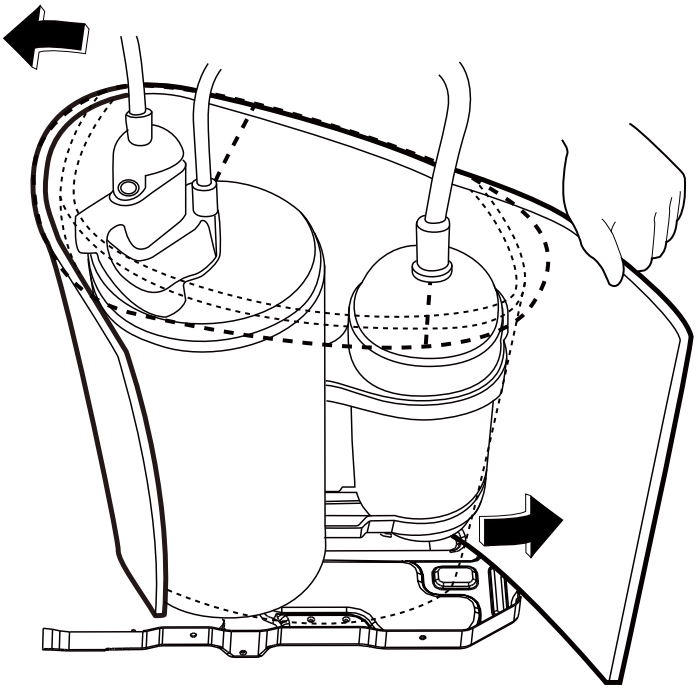
Note: Remove the front panel and fan motor (refer to 1.1 Display Board and Stepping Motor and 1.3. Fan motor) before disassembling pump

Procedure	Illustration
1) Remove 2 screws and then remove the evaporator. (see CJ_CS_IDU_025).	 CJ_CS_IDU_025

Note: This section is for reference only. Actual unit appearance may vary.

1.6 Sound blanket

Note: Remove the panel plate and sound insulation cover (refer to 1.1 Panel plate and 1.3 Fan motor and fan) before disassembling sound blanket.

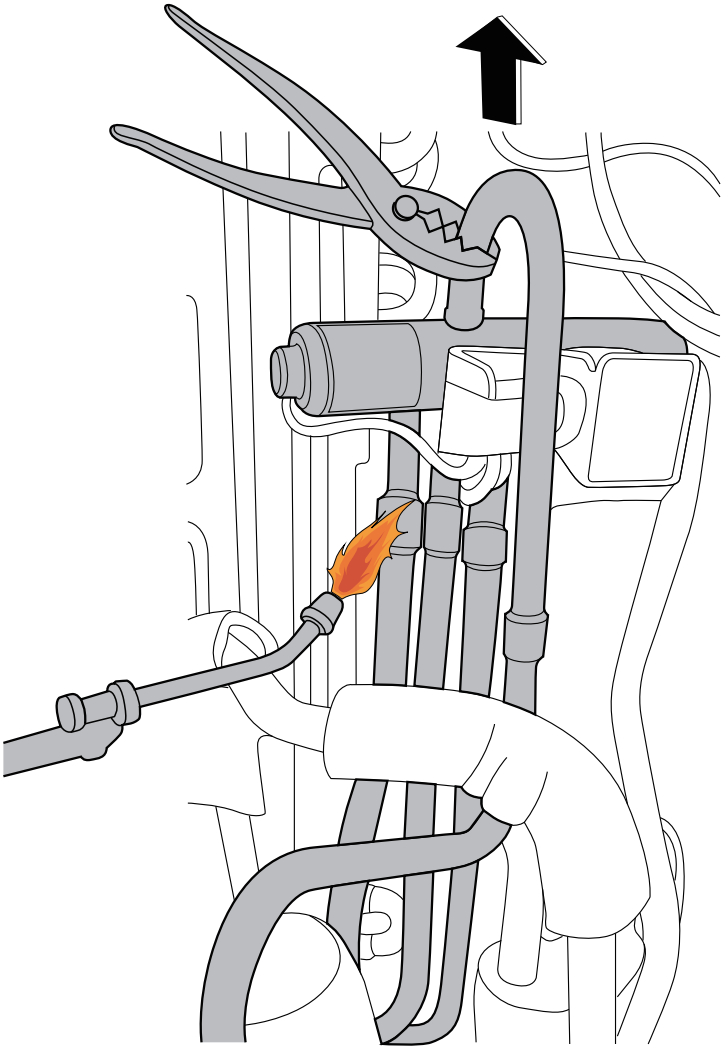
Procedure	Illustration
1) Remove the sound blanket (side and top) (see CJ_CS_IDU_026).	 CJ_CS_IDU_026

Note: This section is for reference only. Actual unit appearance may vary.

1.7 Four-way valve

WARNING: Evacuate the system and confirm that there is no refrigerant left in the system before removing the four-way valve and the compressor. (For R32, you should evacuate the system with the vacuum pump; flush the system with nitrogen; then repeat the two steps before heating up the brazed parts. The operations above should be implemented by professionals.)

Note: Remove the panel plate, sound insulation cover and connection of four-way valve on PCB (refer to 1.1 Panel plate,1.2 Electrical parts and 1.3 Fan motor and fan) before disassembling Four-way valve.

Procedure	Illustration
1) Heat up the brazed parts and then detach the the four-way valve and the pipe (see CJ_CS_IDU_027). 2) Remove the four-way valve assembly with pliers.	

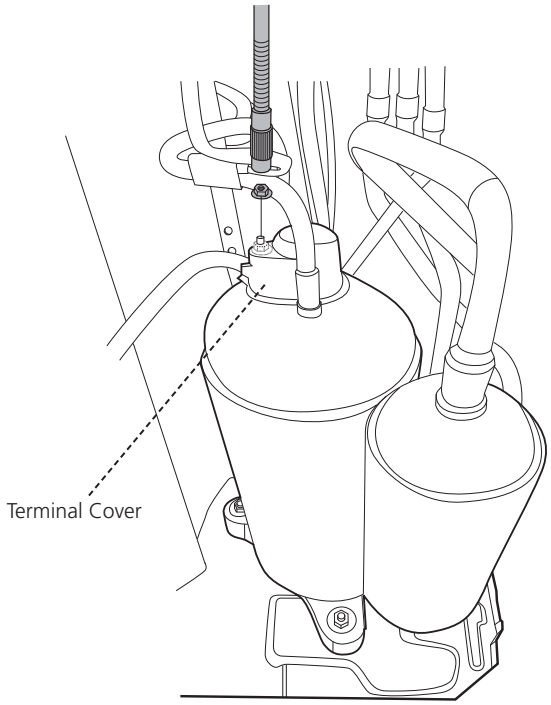
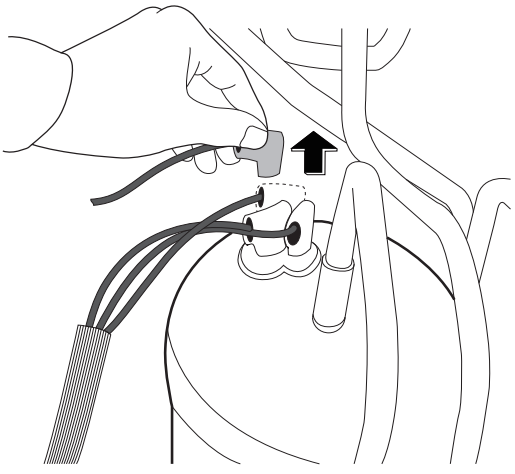
CJ_CS_IDU_027

Note: This section is for reference only. Actual unit appearance may vary.

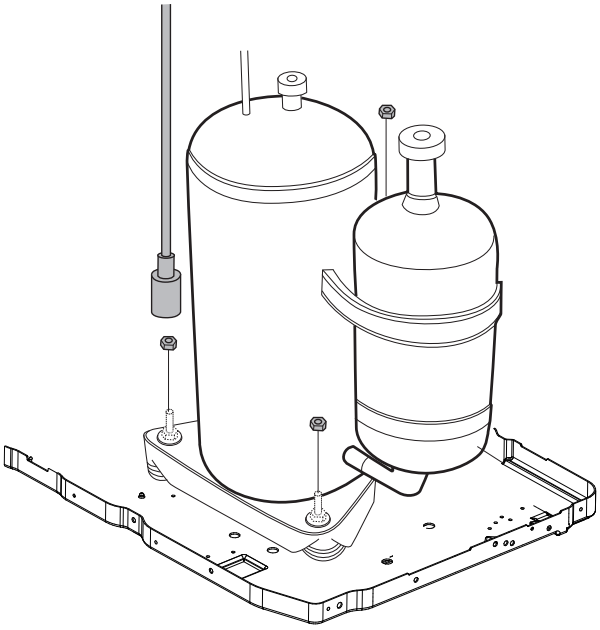
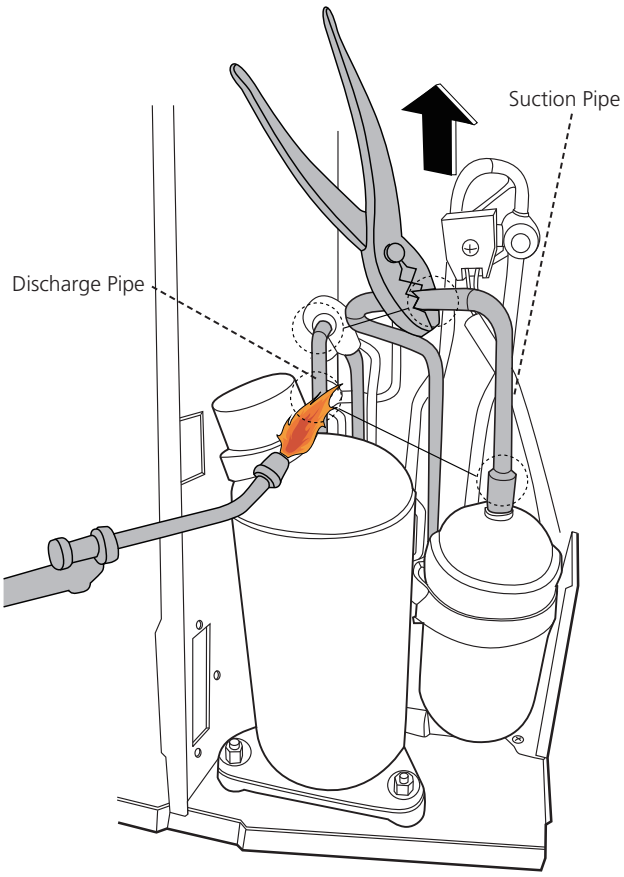
1.8 Compressor

WARNING: Evacuate the system and confirm that there is no refrigerant left in the system before removing the four-way valve and the compressor. (For R32, you should evacuate the system with the vacuum pump; flush the system with nitrogen; then repeat the two steps before heating up the brazed parts. The operations above should be implemented by professionals.)

Note: Remove the panel plate and sound insulation cover (refer to 1.1 Panel plate and 1.3 Fan motor and fan) before disassembling compressor.

Procedure	Illustration
1) Remove the flange nut of terminal cover and remove the terminal cover (see CJ_CS_IDU_028).	 **CJ_CS_IDU_028**
2) Disconnect the connectors (see CJ_CS_IDU_029).	 **CJ_CS_IDU_029**

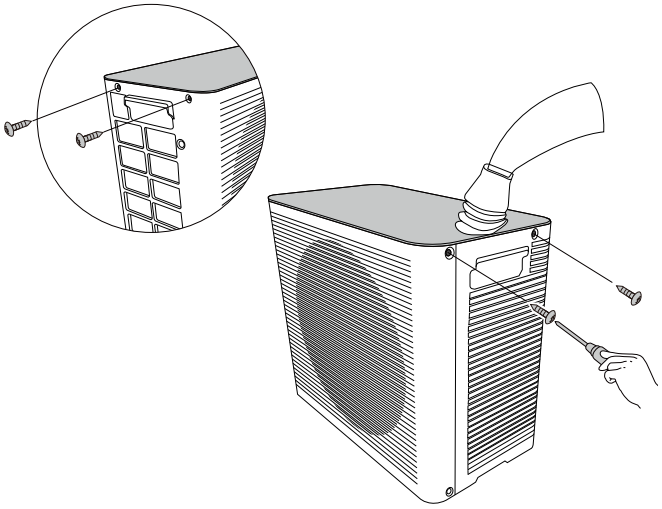
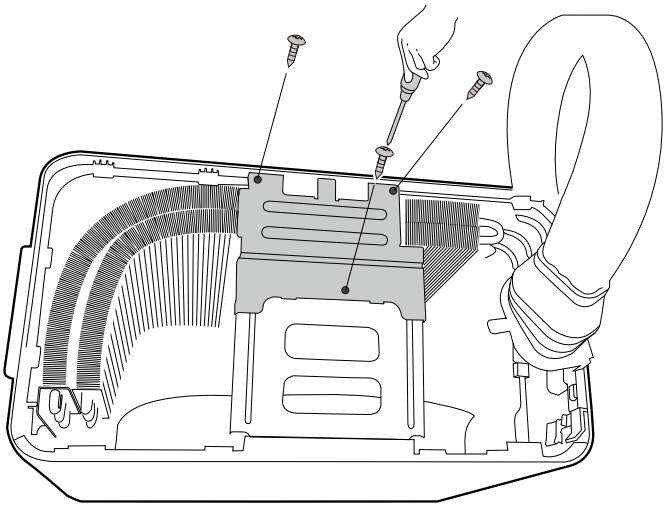
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
3) Remove the hex nuts and washers securing the compressor, located on the bottom plate (see CJ_CS_IDU_030).	 CJ_CS_IDU_030
4) Heat up the brazed parts and then remove the the discharge pipe and the suction pipe (see CJ_CS_IDU_031). 5) Lift the compressor from the base pan assembly with pliers.	 CJ_CS_IDU_031

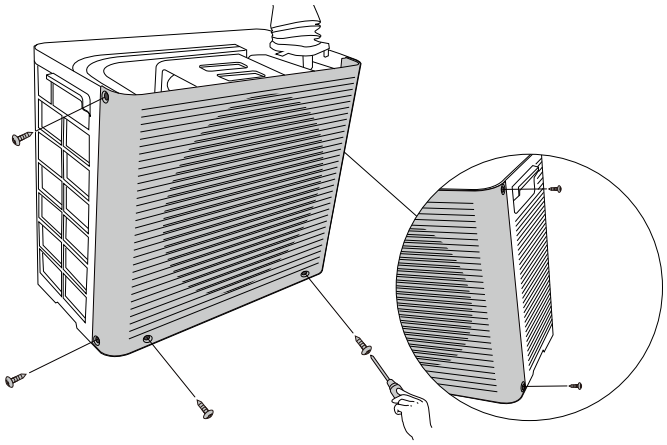
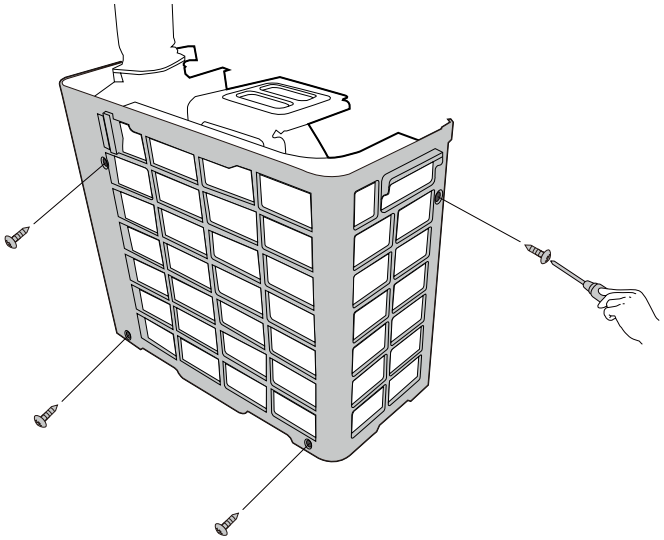
Note: This section is for reference only. Actual unit appearance may vary.

2. Outdoor Unit Disassembly

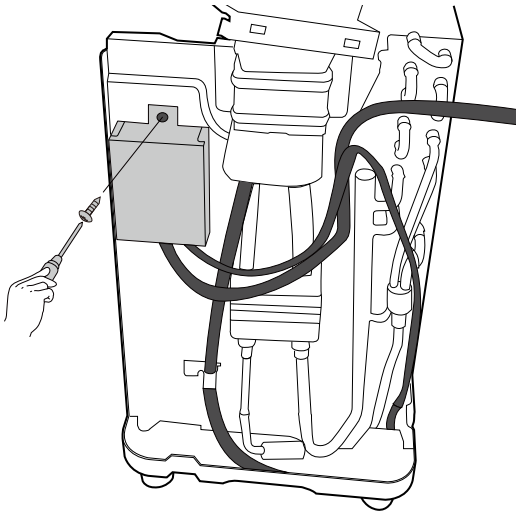
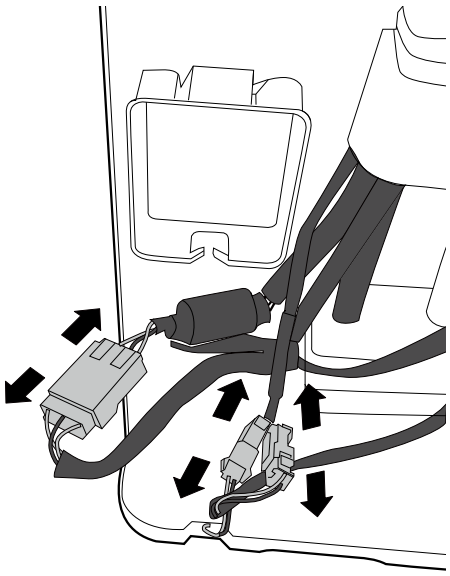
2.1 Panel Plate

Procedure	Illustration
1) Remove the screws of the top cover and then remove the top cover (4 screws). (see CJ_CS_ODU_001).	 CJ_CS_ODU_001
2) Remove the screws and then remove the rear outdoor unit motor frame(3 screws). (see CJ_CS_ODU_002).	 CJ_CS_ODU_002

Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
3) Remove 6 screws and then remove the outdoor front panel.(see CJ_CS_ODU_003)	 CJ_CS_ODU_003
4) Remove 4 screws and then remove the outdoor rear panel.(see CJ_CS_ODU_004)	 CJ_CS_ODU_004

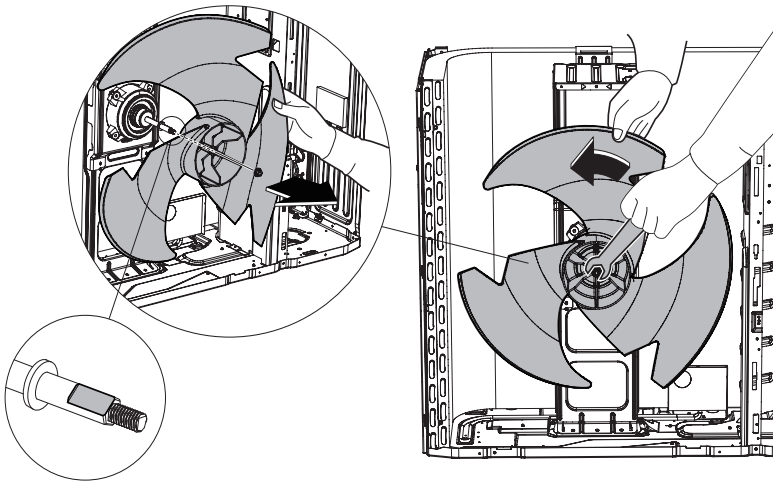
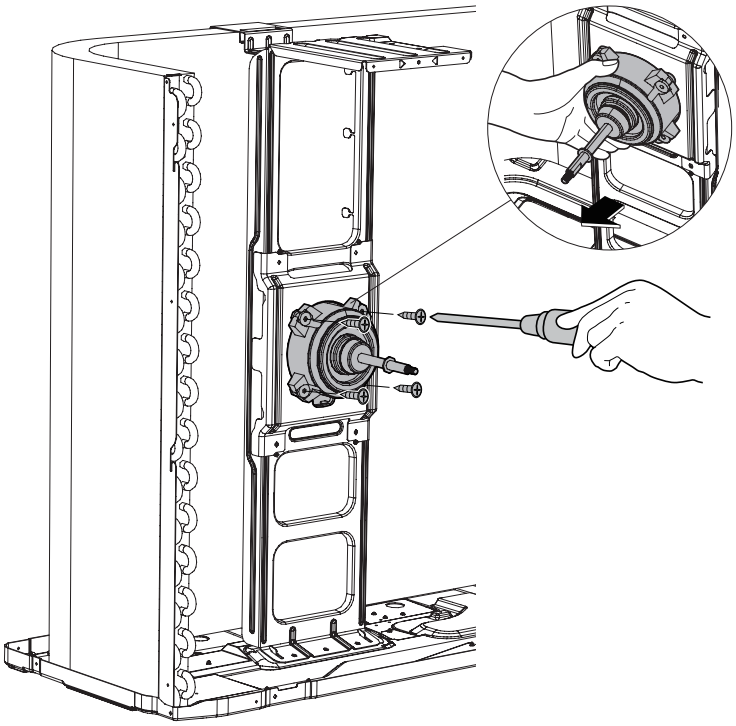
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
5) Remove 1 screw and then remove the junction box cover.(see CJ_CS_ODU_005)	 CJ_CS_ODU_005
6) Disconnect the connectors.(see CJ_CS_ODU_006)	 CJ_CS_ODU_006

Note: This section is for reference only. Actual unit appearance may vary.

2.2 Fan Assembly and Fan Motor

Note: Remove the panel plate (refer to 2.1 Panel Plate) before disassembling fan assembly.

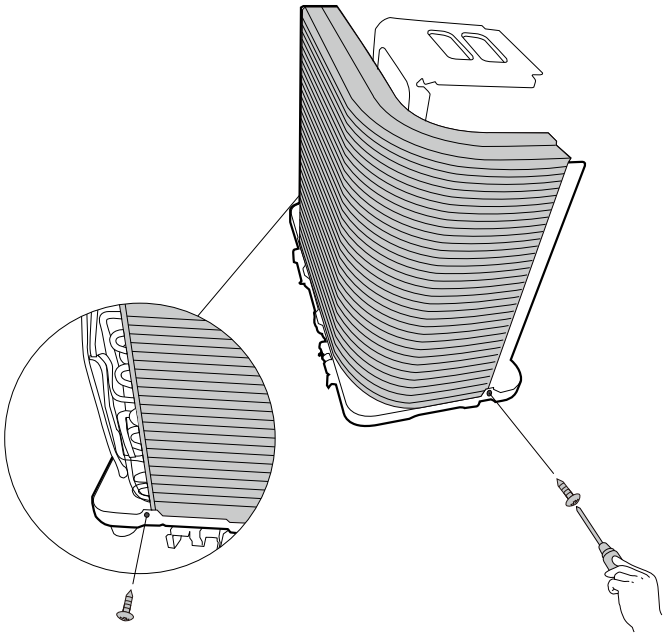
Procedure	Illustration
1) Remove the nut securing the fan with a spanner (see CJ_CS_ODU_007). 2) Remove the fan.	 **CJ_CS_ODU_007**
3) Remove the fixing screws of the fan motor (4 screws) (see CJ_CS_ODU_008). 4) Remove the fan motor.	 **CJ_CS_ODU_008**

Note: This section is for reference only. Actual unit appearance may vary.

2.3 Condenser Assembly

WARNING: Evacuate the system and confirm that there is no refrigerant left in the system before removing the four-way valve and the compressor. (For R32, you should evacuate the system with the vacuum pump; flush the system with nitrogen; then repeat the two steps before heating up the brazed parts. The operations above should be implemented by professionals.)

Note: Remove the panel plate and fan assembly(refer to 2.1 Panel Plate and 2.2 Fan Assembly and Fan Motor) before disassembling condenser assembly.

Procedure	Illustration
1) Remove 2 screws and then remove the condenser assembly. (see CJ_CS_ODU_009).	 CJ_CS_ODU_009

Note: This section is for reference only. Actual unit appearance may vary.

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iii) Pressure On Service Port 4

i) Temperature Sensor Resistance Value Table for T1,T2,T3 and T4 (°C – K)

°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm
-20	-4	115.266	20	68	12.6431	60	140	2.35774	100	212	0.62973
-19	-2	108.146	21	70	12.0561	61	142	2.27249	101	214	0.61148
-18	0	101.517	22	72	11.5	62	144	2.19073	102	216	0.59386
-17	1	96.3423	23	73	10.9731	63	145	2.11241	103	217	0.57683
-16	3	89.5865	24	75	10.4736	64	147	2.03732	104	219	0.56038
-15	5	84.219	25	77	10	65	149	1.96532	105	221	0.54448
-14	7	79.311	26	79	9.55074	66	151	1.89627	106	223	0.52912
-13	9	74.536	27	81	9.12445	67	153	1.83003	107	225	0.51426
-12	10	70.1698	28	82	8.71983	68	154	1.76647	108	226	0.49989
-11	12	66.0898	29	84	8.33566	69	156	1.70547	109	228	0.486
-10	14	62.2756	30	86	7.97078	70	158	1.64691	110	230	0.47256
-9	16	58.7079	31	88	7.62411	71	160	1.59068	111	232	0.45957
-8	18	56.3694	32	90	7.29464	72	162	1.53668	112	234	0.44699
-7	19	52.2438	33	91	6.98142	73	163	1.48481	113	235	0.43482
-6	21	49.3161	34	93	6.68355	74	165	1.43498	114	237	0.42304
-5	23	46.5725	35	95	6.40021	75	167	1.38703	115	239	0.41164
-4	25	44	36	97	6.13059	76	169	1.34105	116	241	0.4006
-3	27	41.5878	37	99	5.87359	77	171	1.29078	117	243	0.38991
-2	28	39.8239	38	100	5.62961	78	172	1.25423	118	244	0.37956
-1	30	37.1988	39	102	5.39689	79	174	1.2133	119	246	0.36954
0	32	35.2024	40	104	5.17519	80	176	1.17393	120	248	0.35982
1	34	33.3269	41	106	4.96392	81	178	1.13604	121	250	0.35042
2	36	31.5635	42	108	4.76253	82	180	1.09958	122	252	0.3413
3	37	29.9058	43	109	4.5705	83	181	1.06448	123	253	0.33246
4	39	28.3459	44	111	4.38736	84	183	1.03069	124	255	0.3239
5	41	26.8778	45	113	4.21263	85	185	0.99815	125	257	0.31559
6	43	25.4954	46	115	4.04589	86	187	0.96681	126	259	0.30754
7	45	24.1932	47	117	3.88673	87	189	0.93662	127	261	0.29974
8	46	22.5662	48	118	3.73476	88	190	0.90753	128	262	0.29216
9	48	21.8094	49	120	3.58962	89	192	0.8795	129	264	0.28482
10	50	20.7184	50	122	3.45097	90	194	0.85248	130	266	0.2777
11	52	19.6891	51	124	3.31847	91	196	0.82643	131	268	0.27078
12	54	18.7177	52	126	3.19183	92	198	0.80132	132	270	0.26408
13	55	17.8005	53	127	3.07075	93	199	0.77709	133	271	0.25757
14	57	16.9341	54	129	2.95896	94	201	0.75373	134	273	0.25125
15	59	16.1156	55	131	2.84421	95	203	0.73119	135	275	0.24512
16	61	15.3418	56	133	2.73823	96	205	0.70944	136	277	0.23916
17	63	14.6181	57	135	2.63682	97	207	0.68844	137	279	0.23338
18	64	13.918	58	136	2.53973	98	208	0.66818	138	280	0.22776
19	66	13.2631	59	138	2.44677	99	210	0.64862	139	282	0.22231

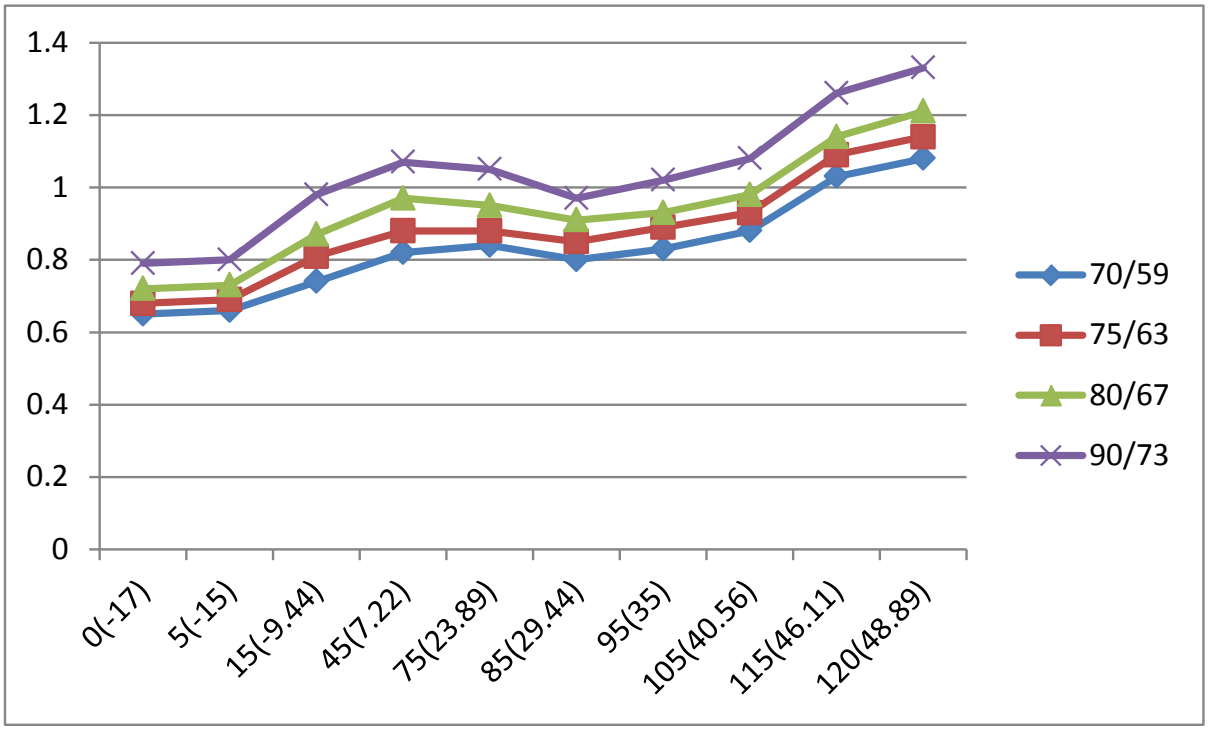
ii) Temperature Sensor Resistance Value Table for TP(for some units) (°C --K)

°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm
°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm	°C	°F	K Ohm
-20	-4	542.7	20	68	68.66	60	140	13.59	100	212	3.702
-19	-2	511.9	21	70	65.62	61	142	13.11	101	214	3.595
-18	0	483	22	72	62.73	62	144	12.65	102	216	3.492
-17	1	455.9	23	73	59.98	63	145	12.21	103	217	3.392
-16	3	430.5	24	75	57.37	64	147	11.79	104	219	3.296
-15	5	406.7	25	77	54.89	65	149	11.38	105	221	3.203
-14	7	384.3	26	79	52.53	66	151	10.99	106	223	3.113
-13	9	363.3	27	81	50.28	67	153	10.61	107	225	3.025
-12	10	343.6	28	82	48.14	68	154	10.25	108	226	2.941
-11	12	325.1	29	84	46.11	69	156	9.902	109	228	2.86
-10	14	307.7	30	86	44.17	70	158	9.569	110	230	2.781
-9	16	291.3	31	88	42.33	71	160	9.248	111	232	2.704
-8	18	275.9	32	90	40.57	72	162	8.94	112	234	2.63
-7	19	261.4	33	91	38.89	73	163	8.643	113	235	2.559
-6	21	247.8	34	93	37.3	74	165	8.358	114	237	2.489
-5	23	234.9	35	95	35.78	75	167	8.084	115	239	2.422
-4	25	222.8	36	97	34.32	76	169	7.82	116	241	2.357
-3	27	211.4	37	99	32.94	77	171	7.566	117	243	2.294
-2	28	200.7	38	100	31.62	78	172	7.321	118	244	2.233
-1	30	190.5	39	102	30.36	79	174	7.086	119	246	2.174
0	32	180.9	40	104	29.15	80	176	6.859	120	248	2.117
1	34	171.9	41	106	28	81	178	6.641	121	250	2.061
2	36	163.3	42	108	26.9	82	180	6.43	122	252	2.007
3	37	155.2	43	109	25.86	83	181	6.228	123	253	1.955
4	39	147.6	44	111	24.85	84	183	6.033	124	255	1.905
5	41	140.4	45	113	23.89	85	185	5.844	125	257	1.856
6	43	133.5	46	115	22.89	86	187	5.663	126	259	1.808
7	45	127.1	47	117	22.1	87	189	5.488	127	261	1.762
8	46	121	48	118	21.26	88	190	5.32	128	262	1.717
9	48	115.2	49	120	20.46	89	192	5.157	129	264	1.674
10	50	109.8	50	122	19.69	90	194	5	130	266	1.632
11	52	104.6	51	124	18.96	91	196	4.849			
12	54	99.69	52	126	18.26	92	198	4.703			
13	55	95.05	53	127	17.58	93	199	4.562			
14	57	90.66	54	129	16.94	94	201	4.426			
15	59	86.49	55	131	16.32	95	203	4.294			
16	61	82.54	56	133	15.73	96	205	4.167			
17	63	78.79	57	135	15.16	97	207	4.045			
18	64	75.24	58	136	14.62	98	208	3.927			
19	66	71.86	59	138	14.09	99	210	3.812			

iii) Pressure On Service Port

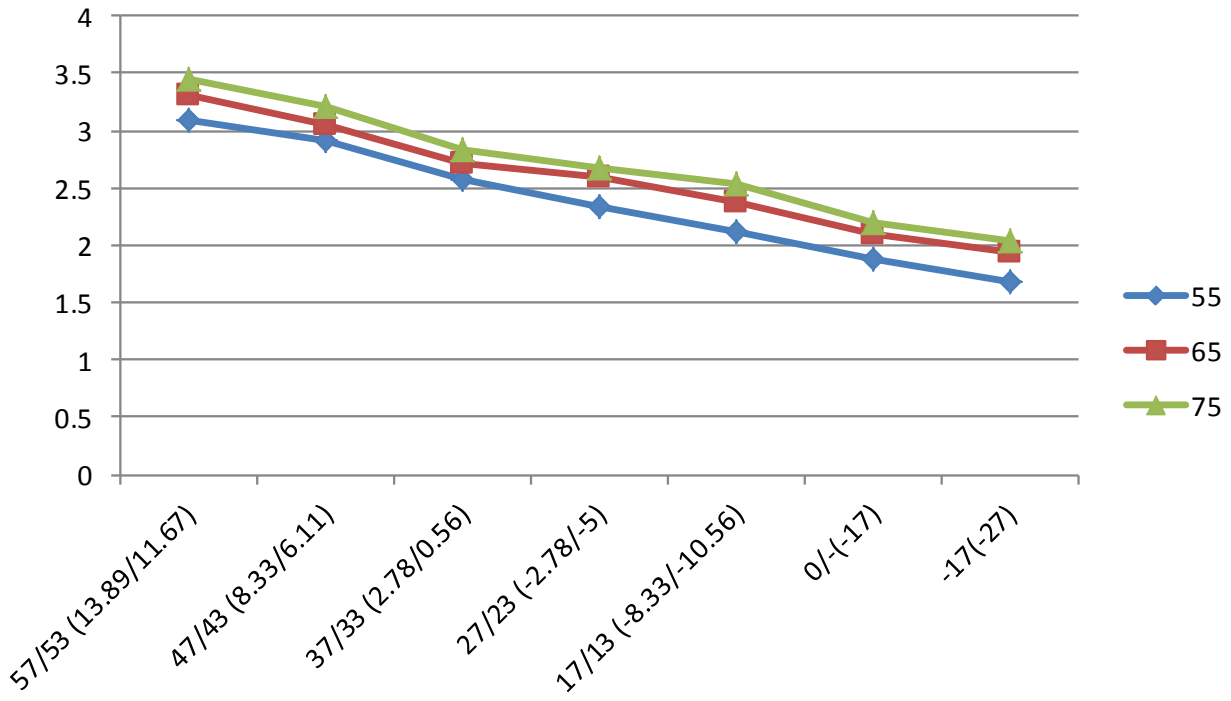
Cooling chart(R32):

°F(°C)	ODU(DB) / IDU(DB/WB)	0(-17)	5(-15)	15 (-9.44)	45 (7.22)	75 (23.89)	85 (29.44)	95 (35)	105 (40.56)	115 (46.11)	120 (48.89)
BAR	70/59 (21.11/15)	6.5	6.6	7.4	8.2	8.4	8.0	8.3	8.8	10.3	10.8
	75/63 (23.89/17.22)	6.8	6.9	8.1	8.8	8.8	8.5	8.9	9.3	10.9	11.4
	80/67 (26.67/19.44)	7.2	7.3	8.7	9.7	9.5	9.1	9.3	9.8	11.4	12.1
	90/73 (32.22/22.78)	7.9	8.0	9.8	10.7	10.5	9.7	10.2	10.8	12.6	13.3
PSI	70/59 (21.11/15)	95	96	108	118	121	115	119	128	150	157
	75/63 (23.89/17.22)	99	101	117	128	126	122	129	135	158	165
	80/67 (26.67/19.44)	105	106	125	141	138	132	135	143	165	176
	90/73 (32.22/22.78)	114	115	142	155	152	141	148	157	184	193
MPa	70/59 (21.11/15)	0.65	0.66	0.74	0.82	0.84	0.80	0.83	0.88	1.03	1.08
	75/63 (23.89/17.22)	0.68	0.69	0.81	0.88	0.88	0.85	0.89	0.93	1.09	1.14
	80/67 (26.67/19.44)	0.72	0.73	0.87	0.97	0.95	0.91	0.93	0.98	1.14	1.21
	90/73 (32.22/22.78)	0.79	0.80	0.98	1.07	1.05	0.97	1.02	1.08	1.26	1.33



Heating chart(R32):

°F(°C)	QDU(DB/WB) / IDU(DB)	57/53 (13.89/11.67)	47/43 (8.33/6.11)	37/33 (2.78/0.56)	27/23 (-2.78/-5)	17/13 (-8.33/-10.56)	0/-2 (-17/-19)	-17/-18 (-27/-28)
BAR	55(12.78)	30.9	29.1	25.8	23.3	21.2	18.9	16.8
	65(18.33)	33.2	30.6	27.1	25.9	23.8	20.9	19.4
	75(23.89)	34.5	32.1	28.4	26.8	25.4	21.9	20.4
PSI	55(12.78)	448	421	374	337	308	273	244
	65(18.33)	480	444	394	375	346	303	282
	75(23.89)	499	466	411	389	369	318	296
MPa	55(12.78)	3.09	2.91	2.58	2.33	2.12	1.89	1.68
	65(18.33)	3.32	3.06	2.71	2.59	2.38	2.09	1.94
	75(23.89)	3.45	3.21	2.84	2.68	2.54	2.19	2.04



System Pressure Table-R32

Pressure			Temperature		Pressure			Temperature	
Kpa	bar	PSI	°C	°F	Kpa	bar	PSI	°C	°F
100	1	14.5	-51.909	-61.436	1850	18.5	268.25	28.425	83.165
150	1.5	21.75	-43.635	-46.543	1900	19	275.5	29.447	85.005
200	2	29	-37.323	-35.181	1950	19.5	282.75	30.448	86.806
250	2.5	36.25	-32.15	-25.87	2000	20	290	31.431	88.576
300	3	43.5	-27.731	-17.916	2050	20.5	297.25	32.395	90.311
350	3.5	50.75	-23.85	-10.93	2100	21	304.5	33.341	92.014
400	4	58	-20.378	-4.680	2150	21.5	311.75	34.271	93.688
450	4.5	65.25	-17.225	0.995	2200	22	319	35.184	95.331
500	5	72.5	-14.331	6.204	2250	22.5	326.25	36.082	96.948
550	5.5	79.75	-11.65	11.03	2300	23	333.5	36.965	98.537
600	6	87	-9.150	15.529	2350	23.5	340.75	37.834	100.101
650	6.5	94.25	-6.805	19.752	2400	24	348	38.688	101.638
700	7	101.5	-4.593	23.734	2450	24.5	355.25	39.529	103.152
750	7.5	108.75	-2.498	27.505	2500	25	362.5	40.358	104.644
800	8	116	-0.506	31.089	2550	25.5	369.75	41.173	106.111
850	8.5	123.25	1.393	34.507	2600	26	377	41.977	107.559
900	9	130.5	3.209	37.777	2650	26.5	384.25	42.769	108.984
950	9.5	137.75	4.951	40.911	2700	27	391.5	43.55	110.39
1000	10	145	6.624	43.923	2750	27.5	398.75	44.32	111.776
1050	10.5	152.25	8.235	46.823	2800	28	406	45.079	113.142
1100	11	159.5	9.790	49.621	2850	28.5	413.25	45.828	114.490
1150	11.5	166.75	11.291	52.324	2900	29	420.5	46.567	115.821
1200	12	174	12.745	54.941	2950	29.5	427.75	47.296	117.133
1250	12.5	181.25	14.153	57.475	3000	30	435	48.015	118.427
1300	13	188.5	15.52	59.936	3050	30.5	442.25	48.726	119.707
1350	13.5	195.75	16.847	62.325	3100	31	449.5	49.428	120.970
1400	14	203	18.138	64.648	3150	31.5	456.75	50.121	122.218
1450	14.5	210.25	19.395	66.911	3200	32	464	50.806	123.451
1500	15	217.5	20.619	69.114	3250	32.5	471.25	51.482	124.668
1550	15.5	224.75	21.813	71.263	3300	33	478.5	52.15	125.87
1600	16	232	22.978	73.360	3350	33.5	485.75	52.811	127.060
1650	16.5	239.25	24.116	75.409	3400	34	493	53.464	128.235
1700	17	246.5	25.229	77.412	3450	34.5	500.25	54.11	129.398
1750	17.5	253.75	26.317	79.371	3500	35	507.5	54.748	130.546
1800	18	261	27.382	81.288					